STATUS REPORT
OF
ADDITIONAL INVESTIGATIONS

ROBERT BOSCH TOOL CORPORATION
LEITCHFIELD DIVISION BUILDING #1
410 EMBRY DRIVE
LEITCHFIELD, GRAYSON COUNTY, KENTUCKY
AGENCY INTEREST # 1579

Prepared for

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MACTEC Project 6680-04-9537-03

September 19, 2008

MACTEC

engineering and constructing a better tomorrow

September 19, 2008

Mr. Timothy Hubbard, P.G.
Superfund Branch
Division of Waste Management,
14 Reilly Road
Frankfort, Kentucky 40601

Subject: **Status Report of Additional Investigations**
Robert Bosch Tool Corporation
Leitchfield Division Building #1
410 Embry Drive, Leitchfield, Grayson County, Kentucky
Agency Interest # 1579
MACTEC Project 6680-04-9537-03

Dear Mr. Hubbard:

On behalf of the Robert Bosch Tool Corporation (RBTC), MACTEC Engineering and Consulting, Inc. (MACTEC) is submitting this Status Report of Additional Investigations to document field activities performed in May-June 2008 at the RBTC Leitchfield Division Building #1 site located at 410 Embry Drive in Leitchfield, Kentucky. This report also includes a plan of additional actions.

If you have any questions, please do not hesitate to contact the undersigned.

Sincerely,

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EXECUTIVE SUMMARY

MACTEC Engineering and Consulting, Inc. (MACTEC) has been retained by Robert Bosch Tool Corporation (RBTC, formerly Vermont American Corporation), a Division of Robert Bosch LLC, to perform a series of Environmental Site Assessment (ESA) and additional investigation services at the RBTC Leitchfield Division – Building #1 (RBTC LDB#1, Agency Interest # 1579) since late 2003. The site is located at 410 Embry Drive in Leitchfield, Kentucky. This report is intended as a Status Report to summarize the most recent investigations, performed in May-June 2008.

Scope of Work

The tasks included in the May-June 2008 effort included:

- a receptor survey;
- a review of historic site plans and a subsurface utility survey;
- a field screening study involving an intensive investigation of the constituents of concern in shallow soil and groundwater, to identify source area and extent;
- installation of 15 monitoring wells (in addition to the eight wells installed in March 2007);
- collection of one round of groundwater samples from all monitoring wells; and
- hydraulic testing of the monitoring wells by means of slug tests.

Findings and Conclusions

The following conclusions were developed from the findings of these tasks:

- Based on interviews and a review of available records, MACTEC did not identify any human receptors or sensitive ecological resources potentially affected by water quality impacts at the RBTC LDB#1 site.

- The shallow subsurface at the site consists of silty clay overburden soils grading downward into shale bedrock with thin hard rock (limestone and sandstone) interbeds. Relatively unweathered rock is encountered at variable depths ranging from 4.5 to 18.5 feet bgs.

- Most of the flow in the shallow groundwater zone appears to occur in localized intervals in the vertical profile where shale partings in the rock or relict structures in the clay are relatively open.

- The upper bedrock zone (at the soil-bedrock interface) appears to be somewhat more permeable than the overlying silty clay soil, and to offer the primary pathway for lateral groundwater flow and contaminant migration in the shallow groundwater zone.

- The overall direction of groundwater flow in the shallow zone is to the north and northeast, in the general direction of the topographic gradient and pre-construction drainage. A bedrock high occurs under the southeastern portion of the plant, probably representing a pre-construction topographic divide, and little to no groundwater flow occurs in this area.

- Two former water supply wells (PW-1 and PW-2) are present at the plant, and are finished at total depths of 375 and 475 feet bgs, respectively. Based on water level measurements in these wells, there is a significant downward vertical gradient in the deeper bedrock. The degree of hydraulic connection between the shallow and deep flow systems and pathways for migration between the two are not completely understood based on available data.

- The constituents of concern (COCs) in soil at the site are TCE (the only VOC detected above residential and industrial PRGs in soil), and TPH (locally in selected areas of the site).

- The source area for TCE impacts, under the west central portion of the plant, appears to be associated with past materials handling processes in the area of the former degreaser (on the north side of the Henry Filter pit), and just outside the original building, which ended just south of the plating room.

- Minor source areas for TCE were also identified at the former Hazardous Waste Accumulation Building, the Flat Bed Grinder Area, the Maintenance Area (southwest corner of the plant), and the northern (east and center) portion of the building interior.

- The highest concentrations of TPH-O&G have been identified just below the pavement at the former Hazardous Waste Accumulation Building. Minor source areas of TPH-O&G were also identified at the Maintenance Area, Circular Saw Blade Grinding Area, near the Henry Filter pit, in the northern portion of the plant, and outside the plant to the west.

- The COCs in groundwater identified on the basis of the cumulative analytical data are the CVOCs TCE, cis-1,2-DCE, 1,1,-DCE and VC, based on concentrations and frequency of detection over the groundwater screening levels. Groundwater impacts from TPH and metals are not significant.

- CVOC impacts in shallow groundwater are widespread across the site. The highest groundwater concentrations (>100 mg/L) are associated with the soil source area identified under the west-central portion of the plant, in the area of the former degreaser (north side of the Henry Filter pit) and the south wall of the original plant.

- CVOC concentrations have been found to be higher in shallow groundwater than in soil in the source area (e.g., 421 mg/L compared to 110 mg/kg in GP-26), and are generally one or more orders of magnitude higher in groundwater than in soil in the rest of the plume area.

- The presence of TCE degradation products in the plume, which generally increase as a percent of total CVOCs with distance from the source area, indicates reductive dechlorination (natural attenuation) is occurring.

- The May-June 2008 investigations focused on the area of the plant building, and the full extent of CVOC impacts in shallow groundwater has not been defined to the east and northeast or at the western boundary (where further definition in the direction of the neighboring facility, CH#1, is impractical due to site topography).

- The mechanisms for contaminant migration in the area of the shallow plume are not completely understood, but appear to be related to the combined effects of man-made conduits (subsurface utilities) and bedrock structure (fractures and troughs).

- In the source area under the west-central portion of the plant, total CVOC concentrations in groundwater decrease with depth, based on the results from one round of groundwater samples collected from two sets of well pairs.

- CVOCs have been detected in both the deep former supply wells (PW-1 and PW-2). The presence of CVOCs in the deep wells may have resulted from deep fracturing in combination with a downward vertical gradient, or possibly from incomplete sealing of the former supply well casings, which may have acted as conduits for downward migration from the shallow zone.

- Site conditions favor corrective actions focusing on groundwater rather than soil, due to the presence of higher concentrations of CVOCs in groundwater than in soil.

- The following data gaps have been identified for investigation in an additional phase of field activities:
    - The distribution of CVOC impacts in groundwater on the northeast portion of the property;
    - The distribution of CVOCs with depth; and
    - The connection between the deep former supply wells and the shallow flow system, and the mechanism for contaminant migration from the shallow to the deep system.

Recommendations

The actions proposed to be conducted in the next phase consist of the following:

- A two-step investigation similar to the one conducted in May-June 2008 (including an initial field screening study followed by the installation of permanent monitoring wells in the shallow groundwater zone) will be conducted in order to complete the definition of extent of CVOC impacts in groundwater on the northeast portion of the site.

- Additional monitoring wells will be installed at a mid-level depth, on the order of 50 to 60 feet bgs, in order to further define the extent of CVOC impacts with depth. The new mid-level wells will be paired with existing shallow wells on the outside of the plant, and will be installed using a double casing approach.

- A full round of groundwater sampling will be performed including all of the existing and new wells. The samples will be analyzed for VOCs by U.S. EPA Method 8260B.

- Slug tests will be performed in the new wells. All new wells will be tied by survey to NAVD, and at least three full rounds of water level gauging will be conducted concurrently with the groundwater sampling and pumping test activities.

- A long-term pumping test will be conducted at former supply well PW-2, in order to evaluate the hydraulic relationship between the deep wells and nearby shallow wells, and the trends in concentrations in both zones (if any) in response to pumping.

- In order to expedite corrective action at the site, MACTEC proposes to conduct pilot testing of selected remedial technologies in the source area concurrently with the additional investigations described above.

1.0 INTRODUCTION

MACTEC Engineering and Consulting, Inc. (MACTEC) has been retained by Robert Bosch Tool Corporation (RBTC, formerly Vermont American Corporation), a Division of Robert Bosch LLC, to perform Environmental Site Assessment (ESA) and additional investigation services at the RBTC Leitchfield Division – Building #1 (RBTC LDB#1), located at 410 Embry Drive in Leitchfield, Kentucky (Agency Interest # 1579). ESA and investigations activities have been conducted at the site since late 2003. This report is intended as a Status Report to summarize the most recent investigations, performed in May-June 2008.

1.1 SITE DESCRIPTION AND HISTORY

The subject property consists of a tract, approximately seven acres in size, developed with an 86,000 square foot manufacturing facility and associated outbuildings, including storage buildings, a hazardous waste accumulation building, a solid waste dumpster storage building, a steam cleaning shed, and other small buildings. The property is located north of downtown Leitchfield at 410 Embry Drive, approximately 800 feet west-northwest of the intersection of Embry Drive and Salt River Road in Leitchfield, Grayson County, Kentucky. The site location is shown on the topographic map in Figure 1. The site vicinity is shown on the aerial photograph in Figure 2.

The site and surrounding area were developed as an industrial park (the Salt River Industrial Park) in the 1960s. The Campbell Group (formerly Campbell Hausfeld), which occupies several buildings west and north-northwest of the subject facility, manufactures power painting equipment, air compressors, and winches. Leggett & Platt, Inc., located north of the subject facility across Embry Drive, manufactures sofa bed mechanisms.

The Vermont American Leitchfield Division Building #1 manufacturing plant was constructed in 1969 as a 43,000 square foot manufacturing building, and commenced operations in 1970. The facility was expanded in 1974 to its current size of 86,000 square feet. The facility originally manufactured screw driver bits, carbide drill bits, and carbide-tipped circular saws. From 1986 to 1996, hedge trimmers were also manufactured at the facility. Processes formerly performed at the plant included metal working and grinding, chrome and nickel plating, vapor degreasing, and salt heat treating.

Public water and sewer were supplied to the industrial park, including the Vermont American plant, when development first occurred in the 1960s and 1970s. In the late 1970s, Vermont American installed an onsite production well just outside the southwest corner of the expanded plant (referred to as PW-2). A second onsite production well (PW-1) was installed in 1987, close to the southwest property corner.

In 1991, during an excavation for a sump (pit) to house the central coolant fluid recirculation system (known as a Henry Filter), excavation materials (soil, sand, and cement) were encountered that were found to be impacted by trichloroethene (TCE). The source of the TCE-impacted materials was reportedly from degreasing operations that had been formerly conducted in the general vicinity of the Henry Filter pit excavation. The materials were temporarily stockpiled onsite (in the vicinity of the Hazardous Waste Accumulation Building), and eventually disposed offsite. Approximately 100,000 pounds (50 tons) of TCE-impacted excavation materials were transported from the site and properly disposed.

Manufacturing operations at the facility ceased in late 2004, and the property has been vacant since that time.

1.2 PREVIOUS INVESTIGATIONS

This section describes the previous phases of assessments and investigations performed by MACTEC at the site since late 2003. Former manufacturing and waste handling areas at the plant are shown on the site map in Figure 3, along with previous sampling locations.

In late 2003-early 2004, MACTEC performed a Phase I Environmental Site Assessment (ESA) of the facility as documented in MACTEC's *Report of Phase I Environmental Site Assessment, Robert Bosch Tool Corporation, Leitchfield Division – Building #1, Leitchfield, Kentucky* (MACTEC Project 6690-03-9487-03), dated January 20, 2004. Based on the results of the Phase I ESA, MACTEC identified several "recognized environmental conditions (RECs)" and potential RECs.

In November 2004, MACTEC performed an initial Phase II ESA to evaluate whether the RECs or potential RECs identified in the Phase I ESA had impacted soil and/or ground water at the site. The initial Phase II ESA activities included:

- Advancement of 10 soil borings, referred to as SB-1 through SB-10, using direct push technology (DPT) for SB-1 and hand-augering for the rest;

- Collection of ten shallow soil samples and nine deep soil samples, analyzed for total petroleum hydrocarbon – oil & grease (TPH-O&G), volatile organic compounds (VOCs), and nine metals.

- Collection of one sample of standing water from beneath the floor in the Henry Filter area (HF-1), analyzed for TPH-O&G, VOCs and metals;

- Installation of four temporary monitoring wells (TMW-1 through TMW-4) in DPT borings;

- Collection of four groundwater samples from the temporary monitoring wells, and one groundwater sample from one of the two onsite production wells (PW-1), all analyzed for TPH-O&G, VOCs and metals; and

- Collection of two surface water samples (SW-1 and SW-2) from the ditchline running along the western property boundary.

The methods and findings of the initial Phase II ESA were documented in MACTEC's *Report of Phase II Environmental Site Assessment, Robert Bosch Tool Corporation, Leitchfield Division Building #1, 410 Embry Drive, Leitchfield, Kentucky* (MACTEC Project 6680-04-9537-01) dated January 5, 2005. The report concluded that exceedances of regulatory criteria were detected in soil and groundwater.

In March 2007, MACTEC performed an Additional Phase II ESA at the site, to confirm and further delineate the areas of exceedance identified in the initial Phase II ESA. The additional assessment services were performed in accordance with MACTEC's *Additional Phase II Environmental Site Assessment Work Plan, Robert Bosch Tool Corporation, Leitchfield Division Building #1, Leitchfield, Kentucky,* dated June 2006, which was approved the Kentucky Department for Environmental Protection, Division of Waste Management (DWM) verbally by Mr. Timothy Hubbard on January 30, 2007, and in writing on March 8, 2007. Services performed as part of the Additional Phase II ESA included:

- Advancement of 18 DPT soil borings in two areas of the site: the Hazardous Waste Accumulation Building (GP-1 through GP-10) and the Flat Bed Grinder Area (GP-11 through GP-18).

- Collection of nineteen soil samples for analysis of VOCs (all samples) and TPH-O&G (Hazardous Waste Accumulation Building only).

- Installation of eight permanent monitoring wells (MW-1 through MW-8) in the overburden outside the building to the southwest, west, northwest, north and northeast.

- Collection of groundwater samples from the eight overburden monitoring wells (analyzed for VOCs and metals) and from the two onsite production wells, PW-1 and PW-2 (analyzed for VOCs only).

- One additional sample of surface water (labeled SEEP) was collected from the seepage entering the concrete ditch that runs along Embry Road on the north side of the building on April 18, 2007. This sample was inadvertently omitted from the Additional Phase II ESA report, but has been included in this report.

The methods and findings of the field work performed in March 2007 were documented in MACTEC's *Status Report of Additional Phase II Environmental Site Assessment, Robert Bosch Tool Corporation, Leitchfield Division Building #1, 410 Embry Drive, Leitchfield, Kentucky, Agency Interest # 1579* (MACTEC Project 6680-04-9537-03), dated January 25, 2008. That report also included a review of the physical setting and a conceptual hydrogeologic model for the site, and a review of file materials for the neighboring industrial site to the west, Campbell Hausfeld Building #1 (CH#1).

The report concluded that a release of TCE to ground water at the site was indicated, based on the widespread presence of chlorinated volatile organic compounds (CVOCs), including TCE and its degradation products, in groundwater sampled from the eight monitoring and two former supply wells. The report recommended additional investigations to more completely define the extent and identify source areas in soil and shallow groundwater, and a receptor survey to identify human receptors and/or ecological resources potentially impacted by the presence of TCE and related compounds in groundwater. Implementation of these recommendations was approved by the KDWM in a letter from the Superfund Branch dated April 25, 2008 (Appendix A).

1.3 SCOPE OF WORK AND REPORT ORGANIZATION

The following additional investigation tasks were performed by MACTEC in May-July 2008, to address the recommendations developed from the findings of the previous investigations:

Task 1 – Receptor Survey
Task 2 – Site Plan Review
Task 3 – Subsurface Utility Mapping
Task 4 – Field Screening Study

Task 5 – Monitoring Well Installation

Task 6A – Groundwater Monitoring

Task 6B – Monitoring Well Slug Testing

Task 6C – Coordination of Investigation Derived Waste (IDW) Disposal

Task 7 – Report Preparation

The site physical setting and the findings of the receptor analysis are reviewed in the following section (Section 2.0). The field activities and investigation methods associated with Tasks 2 through 6 are described in Section 3.0. A discussion of the findings, including a comprehensive review of the hydrogeologic characteristics of the site as well as the analytical data, is provided in Section 4.0. Conclusions and recommendations are presented in Section 5.0, and report qualifications and limitations are stated in Section 6.0.

2.0 PHYSICAL SETTING AND RECEPTOR SURVEY

2.1 SOURCES OF INFORMATION

Much of the discussion in this section has been updated from Section 2.2 of the previous report, *Status Report of Additional Phase II Environmental Site Assessment, Robert Bosch Tool Corporation, Leitchfield Division Building #1, 410 Embry Drive, Leitchfield, Kentucky, Agency Interest # 1579* (MACTEC, January 25, 2008). The following published references were consulted in preparation of that discussion:

Brown, R.F. and T.W. Lambert, 1963. *Availability of Ground water in Breckinridge, Grayson, Hardin, Larue, and Meade Counties, Kentucky*. U.S. Geological Survey Hydrologic Atlas HA-33.

Carey, D.I. and J.F. Stickney, 2005. *Groundwater Resources of Grayson County, Kentucky*. Kentucky Geological Survey, County Report 43, Series XII. Available online at: http://www.uky.edu/KGS/water/library/gwatlas/Grayson/Grayson.htm.

Gildersleeve, Benjamin, 1978. *Geologic Map of the Leitchfield Quadrangle, Grayson County, Kentucky*. U.S. Geological Survey, Map GQ-1316.

Hopkins, H.T., 1966. *Fresh-Saline Water Interface Map of Kentucky*. Kentucky Geological Survey.

McDowell, Robert C., 1986. *The Geology of Kentucky – a Text to Accompany the Geologic Map of Kentucky*, U.S. Geological Survey Professional Paper 1151-H.

Ray, Joseph A. and James C. Currens, 1998. *Mapped Karst Ground-Water Basins in the Beaver Dam 30 x 60 Minute Quadrangle*. Kentucky Geological Survey, Map and Chart Series 19, Series XI, 1998.

U.S. Department of Agriculture, Soil Conservation Service (USDA-SCS), 1972. *Soil Survey of Grayson County, Kentucky*. Issued December 1972.

In addition, the following consultants' reports relating to the Campbell Hausfeld Building #1 (CH#1) property immediately west of the RBTC LDB#1 property, were also consulted:

Kenvirons, Inc., 2003a. *Annual/Semi-Annual Groundwater Sampling and Analysis for Existing Remedial System*. Prepared for Campbell Hausfeld/Scott Fetzer Company, Leitchfield, Kentucky, February 2003.

Kenvirons, Inc., 2003b. *Annual Soil Sampling and Analysis Report for Existing Remedial System*. Prepared for Campbell Hausfeld/Scott Fetzer Company, Leitchfield, Kentucky, March 2003.

Kenvirons, Inc., 2003c. *Evaluation of Groundwater Contamination along the Eastern Property Line of the Campbell Hausfeld Facility*. Prepared for Campbell Hausfeld/Scott Fetzer Company, Leitchfield, Kentucky, April 2003.

Kenvirons, Inc., 2003d. *Proposal to Enhance Existing Remedial System at the Campbell-Hausfeld Facility in Leitchfield, Kentucky*. Prepared for Campbell Hausfeld/Scott Fetzer Company, Leitchfield, Kentucky, April 2003.

Haley & Aldrich of Michigan, Inc. (H&A), 2005a. *Progress Report and Work Plan for Supplemental Investigation Activities, Campbell Hausfeld, Inc., 350 Embry Drive, Leitchfield, Kentucky*. Prepared for Campbell Hausfeld, August 2005.

Haley & Aldrich, Inc. (H&A), 2005b. *Supplemental Site Investigation Work Plan, Campbell Hausfeld, Site, Leitchfield, Kentucky*. Prepared for Campbell Hausfeld, c/o the Scott Fetzer Company, Leitchfield, Kentucky, December 2005.

Haley & Aldrich, Inc. (H&A), 2005c. *Hydraulic Response Assessment/Aquifer Testing, Campbell Hausfeld, Site, Leitchfield, Kentucky*. Prepared for Campbell Hausfeld, c/o the Scott Fetzer Company, Leitchfield, Kentucky, December 2005.

Haley & Aldrich, Inc. (H&A), 2007. *Addendum to the Supplemental Site Investigation Work Plan, Campbell Hausfeld, Site, Leitchfield, Kentucky*. Prepared for Campbell Hausfeld, c/o the Scott Fetzer Company, Leitchfield, Kentucky, January 2007.

As part of the current phase of work, MACTEC performed additional inquiries in order to identify human and/or ecological receptors potentially impacted by the presence of groundwater constituents at the RBTC LDB#1 site. Specifically, MACTEC contacted the following agencies and persons to make these inquiries:

- Leitchfield Utilities (tel: 270-259-3541), concerning the source of potable water in the area, and the location of the gas, water and wastewater distribution systems in the vicinity of the plant.
- The Kentucky Geological Survey (KGS)'s online Kentucky Groundwater Data Repository (http://kgsweb.uky.edu/DataSearching/Water/WaterWellSearch.asp), to identify recorded wells in the area.
- The Kentucky Division of Water (KDOW), for copies of the Well Record forms for wells in the area.
- Mike Hodge, Kentucky Certified Well Driller, Hodge's Well and Pump Service, Leitchfield, Kentucky (tel: 270-259-6711), for information on the former Vermont American supply wells, and other water supply wells in the area.

- The Grayson County Health Department (tel: 270-259-8046), for information on private wells in the area.

- The U.S. Fish and Wildlife Service (USFWS), the Kentucky Department of Fish and Wildlife Resources (KDFWR), and the Kentucky State Nature Preserves Commission (KSNPC) or information on wetlands and any threatened or endangered species in the area.

- The United States Environmental Protection Agency (U.S. EPA) Envirofacts Data Warehouse, available online at http://www.epa.gov/enviro/index.html, for information on nearby industrial properties as well as the site demographics.

The following sections summarize the available information identified through this research.

2.2 SITE TOPOGRAPHY AND DRAINAGE

The RBTC LDB#1 facility is located on a tract of land approximately seven acres in size, less than one mile north-northeast of downtown Leitchfield in Grayson County, Kentucky. The tract is located in the Salt River Industrial Park, northwest of Salt River Road where it intersects the former Illinois and Central railroad line on the north side of town. The property lies between the railroad to the south and Embry Drive to the north. Other industrial facilities are located to the west, northwest, north and northeast of the site. Agricultural land is located farther north and to the east of Salt River Road, and residential properties are located to the south toward town, and immediately southeast of the RBTC LDB#1 property along Kelly Street. Figure 1 shows the site location on the U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle map (Leitchfield Quadrangle, 1967), which depicts pre-construction topography. Figure 2 is an aerial photograph from 1998 showing the site vicinity.

The site is located on the north side of a southeast-northwest trending topographic divide that runs approximately parallel to the railroad track where it crosses Salt River Road. Drainage on the south side of the divide (including most of the City of Leitchfield) is southward via Taylor Fork to Bear Creek. To the north of the divide, surface water drains to the Rough River via Beaverdam Creek. Both Bear Creek to the south, and Rough River to the north, flow west to the Green River, which eventually discharges to the Ohio River between Owensboro and Henderson, about 60 miles west-northwest of Leitchfield.

The top of the topographic divide just south of RBTC LDB#1 has an elevation of about 740 feet above the National Geodetic Vertical Datum of 1929 (NGVD, approximately equivalent to mean sea level, or MSL), and the RBTC LDB#1 property lies at elevations between about 700 and 720 feet NGVD. The natural topography of the site prior to development sloped to the northeast, toward the headwaters of Beaverdam Creek, which originated (according to the topographic map in Figure 1) in the area just north of Embry Drive. The Soil Survey of Grayson County (USDA-SCS, 1972) shows two intermittent tributary streams flowing northeast into Beaverdam Creek on either side of the RBTC LDB#1 plant site. The approximate pre-construction course of these streams has been drawn on the aerial photograph in Figure 2. The stream on the west started just north of the railroad track and south of Campbell Hausfeld Building #1 and joined the course of the ditch that now runs along the west side of the RBTC #1 property. The stream on the east originated close to the intersection of the railroad and Salt River Road, and ran north to Beaverdam Creek under Kelly Street and the property currently occupied by Leggett & Platt.

The natural topography of the site and surrounding area was modified in the late 1960s by development of the industrial park. The building site for RBTC LDB#1 appears to have been dug into the hillside on the south part of the site, so that a steep slope rises from the drive at the back of the main building up to the railroad bed. The storage building on the southeast corner of the property is connected to a retaining wall that holds up the bank to the south and east of that building. The building site for CH#1, to the west of RBTC LDB#1, is set higher, and reportedly (based on consultants' reports prepared for that site) was regraded close to the bedrock surface through a combination of cut-and-fill.

Stormwater drainage at the RBTC LDB #1 site occurs via storm drains and ditches. Seepage and springs emerging from the bank on the south and southeast of the RBTC #1 property are picked up by drain lines and an open grate, that lead west to an open ditch that runs along the property boundary between RBTC LDB#1 and CH#1. That ditch picks up drainage from both sites, including surface drainage and culverts from CH#1, storm drains from the RBTC LDB#1 plant area, and a concrete-lined ditch that runs along Embry Drive. The ditch exits the northwest corner of the RBTC LDB#1 property, and runs under Embry Drive into a large storm drain that runs northeast under the unpaved parking lot between Campbell Hausfeld Building #2 (CH#2) and the Leggett & Platt building and discharges into Beaverdam Creek..

The sanitary sewerage from RBTC LDB #1 is conveyed from the west side of the plant to the northwest corner of the property, then under the northeastern portion of the CH#1 property, to a point just south of the CH#2 building. From there, the combined sewerage is conveyed through a main following Beaverdam Creek to a pumping station on Salt River Road. From there, it is conveyed to the Leitchfield publicly owned treatment plant (POTW). The Leitchfield POTW is located about two miles south of the site, just south of the Western Kentucky Parkway interchange, and discharges to Taylor Fork.

2.3 PHYSIOGRAPHIC SETTING AND GEOLOGY

Information on the physiographic and geologic setting of Western Kentucky is summarized in *The Geology of Kentucky* (McDowell, 1986). Physiographically, the City of Leitchfield lies on the boundary of the Western Coal Field province to the southwest, which is underlain by primarily clastic rocks (shales and sandstones) of Pennsylvanian age, and the Mississippian Plateau province to the north and east, which is underlain by older, primarily carbonate rocks (limestones and dolomites) of Mississippian age. This area is part of a regional syncline (or downward fold), in which the younger Pennsylvanian rocks have been left in the center and eroded around the edges to expose older Mississippian rocks. As a result, the Mississippian Plateau wraps around the Western Coal Field in the shape of a horseshoe. In Leitchfield, the older Mississippian carbonate rocks occur to the north-northeast, and the Pennsylvanian rocks to the south. Although the massive limestone formations of Mississippian age have little primary permeability, they are susceptible to dissolution in the presence of circulating freshwater, and have developed solution features (karst terrain) throughout the Mississippian Plateau region where they occur close to the surface.

Structurally, the whole area lies within the Illinois Basin, a major structural downwarp in the eastern midcontinental United States that extends southwestward through Western Kentucky. This part of the basin is crossed by a series of fault systems that converge in far western Kentucky, southern Illinois and Missouri, where the Illinois Basin meets the Mississippi Embayment, a fault-bounded rift zone extending southwest to the Mississippi delta. Two major fault systems run east-west across the Western Coal field province: the Pennyrile fault system to the south, and the Rough Creek fault system in the area of Leitchfield. The Rough Creek fault system is made up of numerous high-angle normal faults, and less common reverse faults. The total displacement of the faults (downward to the south) has been generally about 300 feet vertically. Most of this displacement is interpreted to have occurred at the end of the Paleozoic era.

The Rough Creek fault system runs west-northwest to east-southeast immediately south of the site and under the City of Leitchfield. The closest mapped fault, which runs just south of the RBTC

LDB#1 property, and through the southern portion of the CH#1 property, is aligned with the topographic divide. According to Dames & Moore (1997, in: H&A, 2005c), this fault has a vertical displacement of 80 to 100 feet (upward on the south side, downward on the north side). Older Mississippian rocks (the Hardinsburg Limestone, and the Haney Limestone and Big Clifty Sandstone members of the Golconda Formation) lie near the surface south of the fault, and younger Mississippian rocks (Glen Dean Limestone and Leitchfield Formation) occur to the north.

The geologic column in Table 1 lists the major geologic units in the area of the RBTC LDB#1 site (north of the fault), summarized from the *Geologic Map of the Leitchfield Quadrangle, Grayson County, Kentucky* (Gildersleeve, 1978). Based on the information available in that source document, on the north side of the fault, the Glen Dean (limestone and shale) extends to a depth of about 30 feet below ground surface (bgs), and is underlain by interbedded sandstone, shale and limestone of the Hardinsburg sandstone and the Haney Limestone to a depth of about 100 feet bgs. The Big Clifty Sandstone (sandstone and shale) and the Girkin Formation (limestone and shale) occur between depths of about 100 and 300 feet bgs. The massive Mississippian limestones of the Ste. Genevieve and St. Louis formations extend below a depth of about 300 feet bgs to at least 450 feet bgs.

2.4 GROUNDWATER

The geologic column in Table 1 also lists the groundwater availability associated with each geologic formation down to a depth of 450 feet bgs. Essentially, the formations in the top 100 feet of the subsurface have little primary permeability and typically yield little to no water to wells. The subsurface formations having the greatest potential for groundwater yield are the Big Clifty sandstone, and the deeper Ste. Genevieve and St. Louis limestones. The moderately permeable Big Clifty Sandstone and Girkin Formations occur between depths of about 100 and 300 feet bgs. The massive Mississippian limestones of the Ste. Genevieve and St. Louis formations, the formations with the greatest potential groundwater yield (depending on the presence of solution channels) extend below this depth to at least 450 feet bgs.

Water obtained from most drilled wells in this area of Kentucky is considered hard. Sodium chloride (common salt) and hydrogen sulfide are the two naturally occurring constituents most often encountered in objectionable amounts in groundwater. Generally, the probability of encountering these constituents increases with depth. Water having total dissolved solids (TDS) concentrations above 1,000 parts per million (ppm) is considered saline. In Grayson County, the fresh-saline interface (i.e., the transition from fresh groundwater to saline water) typically ranges from elevations of 100 feet NGVD to 300 feet in the uplands (Carey and Stickney, 2005), or about 500 feet bgs in the area of the site. However, Hopkins (1966) noted that a well in central Grayson County, finished at a depth of 900 feet bgs (at an elevation of -275 feet NGVD), contained fresh water; he attributed this anomaly to deep circulation of fresh water along the Rough Creek fault system.

The Rough Creek fault system is associated with sinkholes near Short Creek (about 10 miles west-northwest of the site) and springs in the area of Grayson springs (about four miles east-southeast of the site). In the area of the site, it appears to be associated with the headwaters of streams that flow both to the north and the south away from the fault zone, indicating it represents a zone of groundwater discharge in this area. The presence of deep, closely spaced, near-vertical faults associated with the Rough Creek fault zone, on or close to the southern portion of the RBTC LDB#1 site, no doubt adds complexity to the bedrock groundwater flow systems that underlie the site.

Near the surface, shallow groundwater occurs in unconsolidated soil and weathered bedrock (referred to as the shallow zone). Based on the information available from local studies, bedrock occurs at relatively shallow depths (5 to 18 feet bgs), and consists of shale interlayered with thin beds of siltstone, sandstone and limestone. The overlying unconsolidated material is weathered shale and residual silty clay soil derived from shale. Locally, groundwater occurs in perched zones within the fill on the CH#1 property (fill zone). The depth to water in the shallow zone beneath the site varies from less than 2 to about 5 feet bgs, and generally deepens slightly going from south to north. The overall flow direction laterally in the shallow zone appears to follow the topographic gradient, and this zone would be expected to discharge into the Beaverdam Creek drainageway to the north. However, groundwater flow in this zone may also be influenced by relict structural features in the soil associated with faulting and fracturing of the underlying bedrock, and may also be influenced by manmade buried conduits, especially sewers and storm drains.

Nested monitoring wells installed on the neighboring CH#1 property have been completed at various depths in shale bedrock, down to a maximum depth of 60 feet bgs. Reportedly, vertical gradients vary across the site, but are generally upward in the shallow zone during heavy rainfall events (H&A, 2005c). This is consistent with the model of the area as a groundwater discharge area, where recharge during precipitation events quickly fills up the immediately available groundwater storage capacity, and groundwater discharges upward into surface drainageways.

Vertically, the thinly-interbedded shale, sandstone, and limestone rocks near the surface are underlain, and may be underdrained, by more massive and permeable deeper formations, specifically the Big Clifty sandstone (100-160 feet bgs) and the Ste. Genevieve/St. Louis limestones (below 300 feet bgs). Deep vertical fracturing associated with the Rough Creek fault system offers circulation pathways downward into those formations, and the former onsite supply wells PW-1 and PW-2 (depending on how they were constructed) may also represent vertical conduits into deeper formations.

2.5 WATER SUPPLY AND WELLS

2.5.1 Public Water Supply

The City of Leitchfield obtains its water supply from the Rough River. The Leitchfield Utilities water treatment plant is located approximately 7 miles northwest of the site. The Salt River Industrial Park and nearby areas have been served by public water since the area was first developed in the late 1960s.

2.5.2 RBTC LDB#1 Former Supply Wells

Two former water supply wells are present on the RBTC #1 property, referred to as PW-1 and PW-2. PW-1 is located on the southwest corner of the property, and PW-2 is located just outside the southwest corner of the plant.

According to Mike Hodge, a local well driller who has taken over the businesses of several former well drillers in the area, Vermont American installed PW-2 (a 6-inch well) first, in the late 1970s, as an alternative to the public water supply for cost saving purposes. PW-1 (an 8-inch well) was installed in 1987, reportedly to take a larger capacity pump. A KDOW Water Well Record is available for PW-1 (AKGWA # 0002-0656), and was included in MACTEC's previous report. PW-2 (the original 6-inch well) was installed before Water Well Records were required to be filed with the KDOW.

In March 2007, Chase Environmental Group (under subcontract to MACTEC) removed submersible pumps and drop pipes from both wells in order to facilitate sampling. The following information for the two former water supply wells was compiled from MACTEC's observations during pump removal and sampling on March 13, 2007, from the Water Well Record for PW-1, and from verbal information obtained from Mike Hodge:

Well No.	Casing Diameter (inches)	Estimated Borehole Diameter (inches)	Estimated Total Depth (ft bgs)	Pump Setting (ft btoc)	Top of Perfor-ations (ft bgs)	3/13/07 Static Depth to Water (ft btoc)	Pumping Rate During Purging (gpm)
PW-1	8	10	367	320	213	28.55	6.7
PW-2	6	8	475	440	unknown	53.27	22.5

Notes: ft btoc = feet below top of casing; gpm = gallons per minute

Based on available information, the water supply wells at RBTC #1 may have been drilled through the Big Clifty sandstone, down into the Girkin Formation and possibly into the Ste. Genevieve limestone. However, the driller's log for PW-1 (reproduced in Appendix B) does not accurately match up to the geologic column in Table 1, possibly as a result of complex faulting in the area.

2.5.3 Campbell Hausfeld Wells

The Campbell Group (also referred to as Campbell Hausfeld) owns two buildings west (CH#1) and northwest (CH#2) of the RBTC LDB#1 facility (Figure 2). As part of the previous investigations, MACTEC has performed file reviews and reviewed consultants' reports (listed above in Section 2.1) for the Campbell Group/Campbell Hausfeld facilities in late 2003.

The Campbell Group site appears on the U.S. EPA Resource Conservation and Recovery Information System (RCRIS) Notifiers list, identified as a small quantity generator of hazardous waste, and on the RCRIS treatment, storage, and disposal (TSD) list. Numerous violations were reported at the Campbell Group site from 1989 to 2000, including illegally storing hazardous waste in an underground storage tank, exceeding the time limits for storing hazardous waste on the property, and disposing hazardous waste into a Resource Conservation and Recovery Act (RCRA)-regulated landfill without obtaining a permit. Most of the violations appear to be related to an 1,100-gallon underground storage tank (UST) used to store 1,1,1-trichloroethane (TCA). The UST was installed at the CH#1 site in 1979 and removed in 1987. During removal of the UST, soil contamination associated with the tank was documented.

Campbell Hausfeld entered into a Consent Agreement and Final Order with the U.S. EPA on September 19, 1994. The primary contaminants of concern in soil and groundwater at the Campbell Hausfeld facility are volatile organic compounds (VOCs) associated with the UST used to store chlorinated solvent, and with a land disposal area (referred to as a landfill in some documents) for waste solvents just outside the building. The primary solvent associated with these source areas is TCA. VOCs detected at the facility include chlorinated ethanes, specifically TCA and 1,1-dichloroethane (1,1-DCA), and chlorinated ethenes, specifically TCE, 1,1-dichloroethene (1,1-DCE) and cis-1,2,-dichloroethene (cis-1,2-DCE).

According to H&A (2005c), subsurface investigations have been conducted at the CH#1 site since about 1985. Between July and November 2001, a groundwater and soil remediation system was installed to address VOCs in soil and groundwater, close to the identified source areas and at downgradient intercept points. The system includes 18 extraction wells (RS-1 through RS-18) and 10 high vacuum dual-phase extraction points (HVE-1 through HVE-10) installed near selected source area extraction wells. Based on information provided by H&A (2005c), the extraction wells are 8 inches in diameter and are screened in most cases from 8 to 33 feet below ground surface (bgs). Extracted groundwater is treated and discharged to the sanitary sewer. The system operated continuously from late 2001 to late 2005; the current status of the remediation system is unknown.

Soils immediately underlying CH#1 reportedly consist of 6 to 13 feet of unconsolidated soil and weathered shale overlying shale bedrock under the south and west sides of the building, and fill material (not described) over weathered shale and shale bedrock under the north and east portions. Perched groundwater is reportedly present locally in the fill beneath and adjacent to the building.

As of the end of 2005, there were reportedly 39 monitoring wells in and around CH #1, with screened intervals primarily in two depth horizons: 5 to 20 feet bgs (shallow, above competent bedrock), and 30 to 60 feet bgs (deep, in bedrock). Several sets of nested monitoring wells are present, with screened intervals in four separate horizons, labeled F (fill), S (shallow), M (medium), and D (deep). Depths to groundwater measured in the monitoring wells by H&A in November 2005 ranged from 3.1 to 59.31 feet bgs. Both upward and downward hydraulic gradients were indicated by different sets of nested monitoring well data in different areas of the site. Reportedly, the groundwater system responds rapidly to precipitation events and, during periods of heavy rainfall, vertical gradients are generally upward.

Based on the available information, the shallow monitoring wells and the extraction wells on the CH#1 site (north of the fault) appear to be installed primarily in the Glen Dean formation, with the deep monitoring wells being installed in deeper sections of the Glen Dean or in the underlying Hardinsburg Sandstone. Although the Glen Dean formation is described by Gildersleeve (1978) as interbedded limestone and shale, it appears to consist primarily of shale and weathered shale in this area. Based on hydraulic testing conducted in late 2005, H&A (2005c) estimated the hydraulic conductivity of the shallow (weathered shale) zone to be on the order of 0.04 feet per day (ft/day). Eight new wells were planned to be installed on the CH#1 site in 2007, including three offsite wells southeast of the railroad track, on either side of the inferred fault line.

As part of the receptor analysis performed for this phase of the RBTC LDB#1 investigation, MACTEC downloaded the entries for all wells recorded in the KGS online database within a mile of the site, and also requested copies of all available well records within the same radius from the KDOW. The compiled and matched records are summarized in Table B-1 (Appendix B). Of the 74 wells identified from these sources, 62 are associated with the CH#1 site. They include: 10 high-vacuum extraction (HVE) wells, 15 other wells identified as remediation/extraction (RS) wells, 3 springs converted to 3-foot deep monitoring wells, and 34 wells identified as monitoring wells (including one replacement well). The wells recorded at the CH#1 site were installed between 1992 and 2003.

2.5.4 Other Wells

Apart from the former Vermont American supply well (PW-1) and the Campbell Hausfeld (CH#1) wells, only 7 other wells were identified within a mile of the RBTC LDB#1 facility from review of the KGS and KDOW records. These wells are listed at the bottom of Table B-1 in Appendix B. One was an unused hand-dug well, and five were shallow monitoring wells (since abandoned) that were associated with a UST site (Independent Oil Co.) located at 307 Marion Street, approximately one half-mile southwest of the RBTC LDB#1 site. One well was a shallow monitoring well associated with a UST site (Northside BP) located about a half-mile west southwest of the RBTC LDB#1 site. No domestic or industrial supply wells, other than the former Vermont American supply well, were identified in the KGS or KDOW records.

On July 24, 2008, MACTEC spoke by telephone to Mike Hodge, local water well driller. Mr. Hodge stated that he was not aware of any domestic or industrial supply wells in the vicinity of the site, or anywhere within about 4 miles of the City of Leitchfield, except for a possible well installed many years ago at Lowes Concrete Products. He stated that the closest active wells that he knew of were supply wells at dairy farms about 4 miles north of town, and irrigation wells for a golf course about five miles south of town.

Lowes Concrete Products (tel: 270-259-3111) is a ready-mix plant located at 306 Marion Street, approximately a half-mile southwest of the RBTC LDB#1 facility. MACTEC contacted the plant to inquire whether a supply well has been or is still present at that plant. The employee contacted stated that the plant currently uses the public water supply provided by Leitchfield Utilities, and he was not aware of a water well on the property. MACTEC was not able to reach the owner, Tom Glasscock, to confirm the presence or absence of a well historically on the site.

MACTEC contacted Leitchfield Utilities to confirm that all residences and businesses within the City limits, including the area of the Salt River Industrial Park, are served by public water. The Leitchfield Utilities representative contacted was not aware of any residences or businesses using well water within the City limits.

MACTEC also contacted the Grayson County Health Department, Environmental Section. The Health Department oversees private septic systems but not private water supplies, and is not aware of any private water wells in or near the City of Leitchfield.

2.6 NATURAL RESOURCES

MACTEC contacted the U.S. Fish and Wildlife Service and the Kentucky Department of Fish and Wildlife Resources, and these agencies responded on June 4 and June 16, 2008, respectively. Based on their responses, there are no federal or state endangered or threatened species in the area, and no adverse impacts to wetlands, critical habitats, designated wildlife refuges, waterfowl areas, woodlands, special aquatic sites or ecologically sensitive areas would be expected.

On June 13, 2008, the Kentucky State Nature Preserves Commission (KSNPC) provided a letter response to MACTEC's inquiry, along with a detailed data report. The KSNPC data indicated that four species of KSNPC special concern have been observed within 10 miles of the site, including two (one clover species and one bird species) within a mile of the site, one freshwater mussel within five miles of the site, and one additional bird species within 10 miles of the site. A review of the data indicates that the aquatic mussel was observed in a watershed upstream and separate from the RBTC LDB#1 site's watershed. Habitat associated with the RBTC LDB#1 property would be considered unsuitable for any of the observed species, and therefore, impacts to the reported species of KSNPC special concern are not anticipated.

In summary, based on a preliminary review of information provided by the KDFWR, USFWS, and KSNPC regarding the presence of protected species on the Site or within a 10-mile radius of the Site, no protected species are anticipated to be impacted by constituents detected in groundwater at the RBTC LDB#1 site.

2.7 DEMOGRAPHIC SETTING

Grayson County was established as the Kentucky's 54th county in 1810. Leitchfield, the county seat of Grayson County, was first settled in the 1700s and incorporated in 1866.

The following current demographic information for the area within a three-mile radius of the RBTC LDB#1 site (based on data from the 2000 U.S. Census) was obtained from the U.S. EPA Envirofacts database:

Radius of Area:	3 Miles	Land Area:	99.15%	Households in area:	2,185
Center Latitude:	37.491484	Water Area:	0.85%	Housing units in area:	2,479
Center Longitude:	-86.287714	Population Density:	197.07/sq. mi.	Households On Public Assistance:	116
Total Persons:	5,524	Percent Minority:	4.16%	Persons Below Poverty Level:	1,042

3.0 FIELD ACTIVITIES AND INVESTIGATION METHODS

The following sections describe the field activities performed by MACTEC and its subcontractors at the site in May and June 2008.

3.1 PLAN REVIEW AND SUBSURFACE UTILITY SURVEY

Prior to initiating field work at the site, MACTEC reviewed the site plans available from RBTC. No as-built plans were found, however, limited pre-construction design drawings were found showing the planned layout for floor drains and sumps. The drawing review confirmed that the industrial wastewater treatment plant for the facility was always on the west side of the plant (in its current location), that the original main degreaser pit for the plant was located in the northeast corner of the room that currently contains the pit for the central coolant fluid filter system (the Henry Filter pit), and that the southern portion of this room (located just east of the wastewater treatment plant) was the original plating shop for the facility (subsequently converted for use as the blade stripping area). The first phase of the building, constructed in 1969, was the northern half and terminated just south of the degreaser pit (about half-way down the wall of the WWTP); the second phase (i.e., the southern half) was added in 1974.

Based on the plans reviewed, the main sanitary sewer line discharging from the facility was originally intended to exit the plant to the north. Subsequent surveys performed by MACTEC and its subcontractors have shown that the main sewer lines actually drain out of the west side of the building, and exit the property to the northwest, as shown on the site map in Figure 3.

Prior to the start of intrusive activities, MACTEC notified the City of Leitchfield Utilities and KY-811 (Kentucky-Dig-Safely) to have the main lines belonging to public member utilities marked at the property boundaries. In addition, following review of the site plans, MACTEC walked the plant floor and identified all visible floor drains and sumps. MACTEC then engaged The Underground Detective to perform a detailed survey intended to locate as many of the underground service lines in and around the building as possible. The Underground Detective performed the underground utility survey on May 7-9, and used electromagnetic (EM), inline video inspection, and ground-penetrating radar (GPR) methods to locate underground lines.

The information developed from the subsurface utility survey was used to update the base map for the site and to guide the field screening study described in the following section. Subsurface lines and other structures that could be confirmed in the survey are shown on the site map in Figure 4.

3.2 FIELD SCREENING STUDY

Previous investigations performed at the RBTC LDB#1 facility had shown that CVOCs, including TCE and its degradation products, were the principal constituents of concern (COCs) at the site, and were relatively widespread in groundwater. However, a clear source area for the CVOCs had not been identified based on the previous assessment activities. Therefore, a field screening study was designed as an intensive investigation of the plant interior to map the occurrence of CVOCs in soil and groundwater and focus in on potential source area(s), prior to installing additional permanent monitoring wells.

In general, the field screening study consisted of collecting soil and groundwater samples for field analysis from soil borings advanced using DPT methods. Collection of groundwater samples was facilitated by placing temporary wells in the borings and allowing groundwater to recover over a period of one or more days prior to initial sample collection. Soil samples were screened during soil boring advancement using a field photoionization detector (PID). Selected soil samples, and all groundwater samples recovered from the borings, were also screened in the field for the presence of CVOCs using the Color-Tec method. Soil and groundwater samples were then selected for laboratory analysis of VOCs based on the Color-Tec results obtained in the field. Additional detailed information on the methods used in the field screening study is provided in the following sections.

3.2.1 Soil Borings and Soil Sampling

DPT borings were advanced and temporary wells constructed by Chase Environmental Group, under subcontract to MACTEC, between May 13 and May 22, 2008, using a track-mounted Geoprobe® DPT rig. A total of 64 borings, identified as GP-19 to GP-82 were advanced at the locations shown in red on the site map in Figure 3. Soil boring locations for the next day were selected at the end of each day based on the Color-Tec results for the samples collected and screened that day. As a result, they do not follow a clear numerical progression across the plant. The following table is a key to locating the soil borings advanced in May 2008:

Plant Area	Soil Boring(s)
Interior, North End, Center-East	GP-20, GP-29, GP-31, GP-51, GP-54
Interior, North End, West	GP-27, GP-28, GP-37, GP-38, GP-50
Interior, Center (Circular Saw Blade Grinding and Blade Wash)	GP-19, GP-32, GP-33, GP-36, GP-52
Interior, East Side, Center (Braze Department and Flux Room)	GP-21, GP-22, GP-46, GP-47
Interior, East Side, South (Paint Line Areas)	GP-34, GP-35
Interior, South End, Center-West (Circular Saw Blade Grinding, Blade Wash, Carbide Tip Rework, Main Air Compressors)	GP-23, GP-24, GP-25, GP-43, GP-44, GP-45, GP-48
Interior, West Side, Center (Plating, Henry Filter Pit, Blade Stripping, Heat Treating)	GP-26, GP-39, GP-40, GP-41, GP-42
Interior, WWTP	GP-49 (incomplete after three attempts due to shallow refusal)
Exterior, near MW-8 at NE corner of Bldg.	GP-30
Exterior, South End	GP-55, GP-56, GP-57, GP-58, GP-80
Exterior, East Side	GP-59 through GP-63
Exterior, North End	GP-64 through GP-70, GP-79, GP-81, GP-82
Exterior, West Side	GP-71 through GP-78

Each soil boring was advanced with the Geoprobe® rig using a four-foot long, two-inch diameter, stainless steel macro core sampler. The macro core sampler was lined with a disposable plastic (acetate) sleeve for each sample interval, to minimize the potential for cross-contamination. Soil samples were collected continuously from each boring for inspection and logging by the MACTEC field representative. MACTEC used a PID calibrated to 100 ppm isobutylene to screen the soil samples initially for the presence of VOC vapors as the acetate sleeve was first opened.

Soil samples were collected for testing from the single interval (or in some cases two intervals) with the highest PID readings. Two aliquots were collected from the tested interval, one to be field tested using the Color-Tec method (described below), and one to be reserved for possible laboratory analysis. The sample aliquots reserved for laboratory analysis were transferred to 2-ounce glass jars with Teflon-line lids, packed with minimum headspace, and placed in a cooler with ice until final sample selection and transfer to the laboratory.

In general, the soil borings were advanced to refusal through silty clay soil grading into weathered shale interbedded with clay, and less weathered shale. Due to the variable depth of weathering and the presence of thin limestone beds interlayered with the shale, the depth to refusal was variable across the site, ranging from 5 to 20.5 feet in the DPT borings performed in May 2008. A Soil Test

Boring Record field form was used by the MACTEC field representative to record drilling and geologic information and sample locations. Soil descriptions, PID screening results and other pertinent field information are presented on soil boring logs prepared for each soil boring, copies of which are provided in Appendix C.

3.2.2 Temporary Monitoring Wells and Groundwater Sampling

Temporary monitoring wells were constructed of 1-inch diameter schedule 40 PVC, factory slotted screens and flush-threaded riser, set directly in the 2-inch borings, without sandpack or annular seal. The temporary wells were gauged daily with an electronic water level indicator (decontaminated between wells) to check for the presence of water. The temporary wells were sampled once groundwater had recovered to a static level, or once a few inches of water were present in the bottom if the well did not recover fully. Groundwater samples were collected from the wells using clean polyethylene tubing equipped with a stainless steel check valve on the bottom, gently agitated to move the water mechanically from the bottom of the well to the sample collection container with a minimum of disturbance.

Groundwater samples collected for field-screening using the Color-Tec method were collected in 40-milliliter (ml) volatile organic analysis (VOA) vials filled approximately one-half to three-quarters full, with no preservative. New groundwater samples were then collected from each of the temporary monitoring wells selected for laboratory analysis, stored in appropriate containers, and preserved according to the analytical method requirements (i.e., in full 40-ml VOA vials preserved with hydrochloric acid for VOC analysis).

3.2.3 DPT Boring Abandonment

Upon completion of the groundwater sampling activities, the temporary wells in DPT borings were abandoned by pulling the 1-inch diameter PVC screen and riser, and backfilling the boring with hydrated bentonite chips. The borings were completed at ground surface with concrete patch inside the building and with either concrete or asphalt patch in the paved areas outside the building.

3.2.4 Color-Tec Field Screening

Color-Tec is a field-screening methodology developed by Ecology and Environment, Inc. for determining total chlorinated ethene concentrations (a subset of CVOCs) in environmental samples by testing the sample headspace. The Color-Tec method generally consists of:

- transferring the volatile compounds contained in a sample aliquot, from the aliquot into the sample container headspace;
- then passing a known volume of air from the sample container headspace through a graduated colorimetric gas detector tubes.

The colorimetric tubes contain a catalyst that decomposes the chlorinated ethene, releasing hydrogen chloride, which discolors the reagent (4-phenylazodiphenylamine) in the tubes. Any color change within a detector tube indicates the presence of chlorinated ethenes. The detector tubes are constructed of glass and printed with graduated scales to facilitate measurement of the linear extent of the reaction within the tube.

The procedure followed for water samples is the following:

- Fill a 40-milliliter (ml) volatile organic analysis (VOA) vial with a Teflon-lined septum to approximately 60% of the volume of the vial and cap.
- Heat the sample and the detection tube in a water bath with a temperature of 100 to 110° Fahrenheit (F).
- When heated, the vial is shaken vigorously for 20 seconds.
- One end of the colorimetric detection tube is broken and attached to a hand pump. The other end of the tube is broken and attached to a small extraction needle. The extraction needle intake is positioned in the sample headspace above the liquid by penetrating the septum of the vial.
- A larger purge needle is used to penetrate the septum of the vial and the endpoint of the needle is positioned in the liquid sample near the bottom of the vial, to ventilate the sample with ambient air as the headspace gas mixture is pumped out.
- One stroke is pulled on the hand pump and the change in color of the tube is observed.
- The concentration reached by the change in color is read on the graduated tube, and recorded as "Color-Tec Units" (CTUs).

The procedure followed for soil samples is the following:

- Fill a 40-ml VOA vial with approximately 10 cubic centimeters of soil and 10 ml of deionized water (50 to 77% of the volume) and cap.
- The same heating, sample preparation, and sampling procedures described above for water samples are followed.
- The presence of soil particles can cause the purge needle to clog. If there are no bubbles indicating that air is circulating into the vial, the purge needle should be removed, cleared, and reinserted into the vial.

The brand of colorimetric tubes used for this project was Gastec®. Tubes are available for a variety of concentration ranges, and the concentration ranges used for this project were, from lowest to highest, LL, L and HA. The lowest concentration tube is used initially to screen the sample. When a positive result is observed, the concentration level is obtained by matching the linear extent of the discolored reagent inside the tube to the calibration scale printed on the outside of the tube. If the calibrated range of the tube is exceeded by the reaction, a tube with a higher concentration range is used to screen a duplicate sample. This procedure is repeated until the approximate concentration is determined. As a result, each sample field screened for this project was tested two or three times on separate tubes, in order to insure that results were measured on tubes calibrated in the appropriate concentration ranges and were reproducible. In addition, blank samples of distilled water were tested at least once a day, or approximately every 20 samples, to verify that false positive readings were not occurring.

The Color-Tec results, recorded in CTUs, are considered semi-quantitative, in that they may be compared to each other to determine relative concentrations of total chlorinated ethenes between samples, but they are not compound-specific and do not correlate directly with laboratory-determined concentrations. The colorimetric detector tubes are manufactured to detect specific alkenes; however, if there are multiple chlorinated ethenes present in a sample, the identification of a specific chlorinated compound is not possible using the Color-Tec method. Furthermore, the method does not employ Henry's Constant or other partitioning methods to back-calculate the actual concentrations of soil or water samples. The practical quantitation limit for TCE and/or tetrachloroethene (also known as perchloroethylene, or PCE) is about five to ten parts per billion (ppb) as measured in the headspace. Trans-1,2-dichloroethene, 1,1-dichloroethene, or vinyl chloride are generally not detectable with the colorimetric tubes at concentrations below 25 micrograms per liter (μg/l), and samples containing only these compounds may not exhibit detectable levels. Other compounds, including bromine, free chlorine, and hydrogen chloride can react with the detector tubes, and cause false positive readings.

Between May 13 and 28, 2008, MACTEC field-tested a total of 95 soil samples and 60 groundwater samples collected from the 64 DPT borings and temporary monitoring wells using the Color-Tec method. In addition, samples from two of the monitoring wells installed in 2007 were also field-tested early on and compared to the 2007 analytical results, as a check on the method before more recent laboratory analytical data were available.

3.2.5 Laboratory Analyses, Soil and Groundwater

Samples of soil and groundwater were selected each day for laboratory analysis of VOCs based on the results of the Color-Tec field screening. Soil samples were selected from the aliquots reserved for possible laboratory analysis at the time of sample collection, and new groundwater samples were collected from the temporary monitoring wells for laboratory analysis. All samples were containerized and preserved according to analytical method requirements, packed in ice, recorded on a chain-of-custody form, and shipped via overnight delivery service to Environmental Science Corp. (ESC) in Mt. Juliet, Tennessee for analysis.

Approximately one quarter (25 out of 95) of the field-screened soil samples, and two thirds (41 out of 60) of the field-screened groundwater samples collected from DPT borings were analyzed by ESC for VOCs by U.S. EPA Method 8260B. In addition, 10 soil samples were also analyzed for total petroleum hydrocarbons, oil and grease (TPH-O&G) by U.S. EPA Method 9071B, and one soil sample was analyzed for semivolatile organic compounds (SVOCs) including polynuclear aromatic hydrocarbons (PAHs) by U.S. EPA Method 8270C. Soil samples analyzed for TPH-O&G were selected either on the basis of visual and/or odor evidence, or in some cases on a random basis. In general, little to no evidence of petroleum contamination was observed in the soil samples collected in the field-screening study. The one sample analyzed for SVOCs (GP-29, 5-7.5') was selected on the basis of a strong odor. However, no PAHs were detected in this sample and when it was subsequently analyzed for the full suite of SVOCs (out of holding time), none of the other SVOCs were detected either.

3.2.6 Field Screening Study Results

The results of the field screening study are summarized in the following exhibits, provided in Appendix D:

- Figure D-1 – Soil Boring Summary Diagram, is a diagram representing the vertical profile in each soil boring and summarizing the PID, Color-Tec, and laboratory analytical results available for each soil sampling interval, as well as the results available for groundwater.
- Table D-1 is a summary of water level measurements made in the temporary monitoring wells.
- Table D-2 and Figure D-2 are a table and a graph (histogram) comparing field screening and laboratory results for total VOCs in soil samples.
- Table D-3 and Figure D-3 are a table and a graph (histogram) comparing field screening and laboratory results for total VOCs in groundwater samples.

The compound-specific laboratory analytical results for the samples analyzed as part of the field screening study are discussed in more detail in subsequent sections of this report. Based on both the Color-Tec field testing results and the analytical data, the field screening study generally confirmed that the presence of CVOCs was widespread beneath (and in the immediate vicinity) of the plant building, and that the concentrations of these compounds ranged across several orders of magnitude. In general, the correlation between the CTU results and the laboratory analytical results was good for the groundwater samples, and fair for the soil samples. The Color-Tec results (in CTUs) were generally higher than the sum of the CVOC concentrations reported by the laboratory in parts per million (ppm), and several "false positives" were detected by the Color-Tec method in soil samples that had no detectable CVOCs when they were analyzed by the laboratory.

Laboratory-determined concentrations of total CVOCs in soil ranged from <0.0050 milligrams per kilogram (mg/kg), in 7 out of 25 samples to 110 mg/kg (in GP-26, 7.5-10'), and in groundwater ranged from <0.0010 milligrams per liter (mg/L), in 4 out of 46 samples, to 421 mg/L (in the groundwater sample from GP-26). Most of the analytical results for total CVOCs in soil were below 1 ppm (equivalent to mg/kg in soil), with the exception of three samples out of 25 (from GP-26, GP-37 and GP-28). By contrast, more than half of the analytical results for total CVOCs in groundwater exceeded 1 ppm (equivalent to mg/L in water), 12 out of 46 exceeded 10 ppm, and four of those (GP-26, GP-42, GP-53, and GP-27) exceeded 100 ppm. It was concluded that groundwater is the principal medium residually impacted by CVOCs at the site, and that CVOC concentrations in soils from the both the unsaturated and saturated zones are overall lower, in most areas by several orders of magnitude, than CVOC concentrations in groundwater.

A review of the field screening study results indicated that the highest concentrations of CVOCs in both soil and groundwater were present in the vicinity of GP-26, under the west-central portion of the building. Elevated CVOC concentrations in groundwater were found to extend out from the west-central portion of the plant to the west and to the northeast, and to generally decrease to the northwest and southeast.

3.3 MONITORING WELL INSTALLATION

Based on the results of the field screening study, 13 locations were selected for additional overburden monitoring wells. Four of the locations were inside the building, in order to better define the extent of impacts directly beneath the building. Well pairs, consisting of two wells each screened at different depths in the overburden and weathered bedrock, were installed at two of the interior locations, in the area of highest groundwater concentrations. Nine wells were installed outside, to fill in the network of eight exterior wells installed in March 2007. A total of 15 new monitoring wells were installed in June 2008, bringing the total number of overburden monitoring wells at the site to 23. The following table is a key to locating the overburden monitoring wells installed at the site as of June 2008 (locations are also shown on the site map in Figure 3):

Plant Area	Monitoring Wells
Interior	MW-9, MW-10, MW11B/11A, MW-12B/12A
Exterior, south of Building	MW-1, MW-2, MW-18, MW-19
Exterior, east of Building	MW-20, MW-21
Exterior, northeast of Building	MW-8, MW-13
Exterior, north of Building	MW-7, MW-14
Exterior, northwest of Building	MW-6, MW-15
Exterior, west of Building	MW-3, MW-4, MW-5, MW-16, MW-17

Monitoring well installation activities were conducted from May 27 to June 3, 2008, by Chase Environmental Group, Inc., under subcontract to MACTEC, using hollow-stem auger (HSA) methods. A track-mounted Geoprobe® 6620DT direct push rig with augering capabilities was used to advance the monitoring well borings in the interior locations, and a truck-mounted CME-55 high-torque drilling rig was used to advance the borings in the exterior locations, except at locations MW-16 and MW-18, where (due to access limitations) a track-mounted Geoprobe® 66DT direct push rig with augering capabilities was used. Each boring was advanced to refusal, which was encountered between 7 feet bgs at MW-18 and 16.5 feet bgs at MW-9. At the two interior well pair locations (MW-11 and MW-12), the deepest boring (A) was advanced first to refusal (15 ft in MW-11A, and 15.5 ft in MW-12A). After the deep well was constructed, the shallow boring was advanced approximately 4 feet away, and finished at a depth of 9 ft bgs.

A permanent monitoring well consisting of two-inch diameter, Schedule 40 polyvinyl chloride (PVC), flush-threaded well casing and manufactured well screen with 0.010-inch machined slots was installed at each boring. Monitoring wells MW-9, MW-14, MW-16, and MW-17 were constructed with ten feet of screen. Monitoring wells MW-10, MW-11A, MW-11B, MW-12A, MW-12B, MW-13, MW-15, MW-19, MW-20, and MW-21 were constructed with five feet of screen and MW-18 was constructed with three feet of screen. A washed sand filter pack was placed around each well casing from the bottom of the boring to approximately two feet above the top of the well screen. A minimum two-foot thick bentonite seal was then placed above the washed sand filter pack. A summary of well construction details for all of the permanent monitoring wells on the site is provided in Table 2. Boring logs and Kentucky Division of Water (KDOW) Monitoring Well Record forms for the 15 ground-water monitoring wells installed in 2008 are included in Appendix E.

On May 30 (interior wells) and June 4, 2008 (exterior wells), the monitoring wells were developed to remove the residual materials remaining in the wells after installation and to establish good hydraulic connection to the surrounding formation. The wells were developed by hand using disposable polyethylene bailers or decontaminated PVC bailers. Water was removed from each monitoring well until the column of water in the well was free of visible sediment, or until the well went dry and yielded insufficient water for continued development. Three wells (MW-1, MW-19 and MW-21) were subsequently surged with distilled water and bailed dry again, to further insure adequate connection to the formation prior to sampling and testing.

Soil cuttings and purge water generated during monitoring well installation and development were containerized in 55-gallon drums and staged under cover outside the building pending profiling and pick-up for disposal at an appropriate facility.

3.4 GROUNDWATER MONITORING

3.4.1 Water Level Gauging

Water level gauging was initiated during the field screening study, in the existing monitoring wells and in the temporary wells installed in DPT borings, and continued after the new monitoring wells were installed. Water level gauging was performed using an electronic water level indicator (WLI) to measure the depth to water from the top of the well casing in each well. The water level indicator was decontaminated with a solution of Alconox® and DI water and rinsed thoroughly with distilled water between uses.

On June 9, 2008, the vertical elevations of the ground surface and tops of well casings at the new wells were surveyed by Endris Engineering, PSC, under subcontract to MACTEC, and tied to the North American Vertical Datum of 1988 (NAVD).

All available well gauging data for the permanent wells at the site are summarized in Table 3. The most comprehensive gauging data set, including all 23 of the permanent monitoring wells in the overburden and the two deep former water supply wells, was collected on June 18, 2008. Figure 6 is a groundwater elevation contour map for the overburden on that date.

3.4.2 Permanent Monitoring Well Sampling

The 23 permanent monitoring wells in the overburden were sampled by MACTEC using low-flow sampling methods between June 4 and 11, 2008. Three wells (MW-1, MW-19 and MW-21) yielded too small a flow to be sampled by low flow methods. Therefore, these wells were purged dry and allowed to recover for two to five days prior to sampling. MW-1 was sampled on June 11, and MW-19 and MW-21 were sampled on June 16, 2008.

The low-flow groundwater sampling method uses a minimum pumping rate and as little drawdown as possible to evacuate a small portion of the water stored in the screened section of a well, and establish an equilibrium with geochemical conditions in the monitored flow zone. Field parameters, including temperature, pH, specific conductance (SC), dissolved oxygen (DO) and oxidation-reduction potential (ORP) are monitored along with turbidity, in order to determine the time when equilibrium conditions are reached, and the sample is collected at that time. The method, which causes minimum stress to the water-bearing zone, allows collection of samples with minimal alterations to the groundwater chemistry and minimum turbidity, and is particularly well-suited to collecting samples for analysis of total metals.

At each well to be sampled, once the initial water level was measured, clean, disposable ¼-inch outside diameter polyethylene tubing was lowered into the well to a depth approximately in the middle of the well screen, slowly enough to minimize disturbance of water in the well. The polyethylene tubing was then connected to a Geopump peristaltic pump using medical-grade silicone tubing, and then into a YSI flow-through cell. A YSI 600 XL sonde and multiparameter water quality meter were used to measure field parameters in the flow-through cell. A "T" connector was installed between the pump and the flow-through cell with a valve to collect turbidity samples in a separate water stream; turbidity samples were analyzed in the field in a HACH 2100P optical turbidity meter. Once all the connections were made, the pump was started at low speed and the YSI powered on. The pumping (purge) rate was stabilized at a flow rate between 100 and 300 milliliters per minute (ml/min). Water parameter readings from the YSI and turbidity meters, water levels, and purge rates were recorded at five-minute intervals until the water parameters stabilized and a representative groundwater sample could be collected. The tubing was then disconnected at the "T" connector, and appropriate laboratory-supplied containers were filled for analysis of VOCs and metals, and preserved as required by the analytical methods (with hydrochloric acid for VOC analysis, and with nitric acid for metals analysis). Due to the sample volume requirements for the TPH-O&G analysis, the wells were allowed to recover, and samples for TPH-O&G analysis were collected separately, from the top of the water column using a clean disposable bailer at the end of the sampling day.

The water level indicator was decontaminated with a solution of Alconox® and distilled water and rinsed thoroughly with distilled water between uses. The YSI probes and flow-through cell were also rinsed with distilled water after each use and new polyethylene tubing was used at each well. The YSI 600 XL water quality meter and HACH 2100P turbidity meter were calibrated at the start of each sampling day.

Table 4 is a summary of the groundwater field parameters (last three measurements from each well) measured in the June 2008 sampling event, for the 20 wells sampled by low-flow methods, plus MW-1. Flow in MW-1 could not be maintained above 100 ml/min without excessive drawdown, and turbidity increased rather than decreased. Therefore this well and two other wells

(MW-19 and MW-21) were bailed dry then allowed to recover and settle for five days prior to sampling, and the samples were collected with a bailer with a minimum of disturbance to the water column. The final turbidity readings for the 20 wells sampled by low-flow methods were very low, ranging from 1 to 4 nephelometric turbidity units (NTUs), indicating the sediment load in the collected samples was minimal, and should not have influenced the analytical results for metals.

A review of the groundwater field parameter data in Table 4 indicates that pH in the overburden wells ranged from 5.1 to 9.8 standard units (S.U). Specific conductance (SC) ranged from 0.4 to 1.3 milliSiemens per centimeter (mS/cm) in most wells, but was elevated (2.95 to over 28 mS/cm) in the two well pairs installed close to the former plating shop. Dissolved oxygen (DO) concentrations exhibited a wide range (from 0.2 to over 10 mg/L) and oxidation-reduction potential (ORP) values were positive (and generally over 100 millivolts, or mv) in all wells except MW-4. The groundwater with the highest values of SC and DO (from MW-11B, the shallow well closest to the former plating shop) also had a yellow tint, possibly indicative of plating wastewater.

The date and time that each well was sampled is shown on Table 4. All samples were maintained chilled in an iced cooler, and shipped by overnight carrier each night to ESC in Mt. Juliet, Tennessee. All of the groundwater samples collected from overburden monitoring wells in June 2008 were analyzed for VOCs by U.S. EPA Method 8260B, for TPH-O&G by Method 1664A, and for three metals (lead, chromium and nickel) by U.S. EPA Method 6010B. These metals were selected because lead had been detected in the sample collected from MW-1 in March 2007 at a concentration exceeding the federal drinking water action level, and because chromium and nickel are potential indicators of plating wastewater contamination.

Purge water generated during groundwater sampling was containerized in 55-gallon drums and staged under cover outside the building pending profiling and pick-up for disposal at an appropriate facility.

3.4.3 Former Water-Supply Well Sampling

Two deep former water supply wells (PW-1 and PW-2) are present on the property. A Monitoring Well Record obtained from the KDOW for PW-1 indicates this well has an 8-inch steel casing set down to a depth of 367 feet, and perforated from 213 to 367 feet bgs. The submersible pump removed from PW-1 in March 2007 was set at approximately 320 feet bgs. Based on verbal information obtained from a local well driller, Mike Hodge, PW-2 has a six-inch diameter steel casing set down to 475 feet bgs, and possibly perforated from 100 to 475 feet bgs. The submersible pump removed from PW-2 in March 2007 was set at approximately 440 feet bgs.

Due to the excessive volume of water required to be purged from these wells in order to sample them by conventional methods, MACTEC requested approval from the KDWM to demonstrate an alternative sampling method, using passive diffusion bags (PDBs). PDB samplers are low-density polyethylene bags containing deionized water, used to collect water samples in groundwater wells for laboratory analyses of volatile organic compounds (VOCs). PDB samplers are passive devices suspended in the water column of a well. They rely on the movement of groundwater from the surrounding water-bearing formation, through the screen or open interval of the well, so that the water column in the well is representative of formation conditions. VOCs in groundwater diffuse across the bag material (a semi-permeable membrane) until concentrations within the bag reach equilibrium with those in the surrounding groundwater. The recommended minimum equilibration period for PDBs is two weeks. No maximum deployment period has been identified, but PDBs have been successfully left in wells for three months and longer. Multiple PDB monitoring points are recommended in wells with water columns greater than 5 feet in length, at least initially to investigate vertical stratification of VOC concentrations.

MACTEC purchased Equlibrator™ PDBs, ASTM Type II deionized water to fill them, and polypropylene tether lines to suspend the PDBs, from EON Products, Inc. of Snellville, Georgia. The first set of PDBs was deployed at three levels in each of the two former supply wells, on May 12, 2008. The PDBs were placed at approximately 240 feet (top), 290 feet (middle) and 340 feet (bottom) bgs in PW-1, and 340 feet (top), 390 feet (middle), and 440 feet (bottom) bgs in PW-2. The first set of PDBs was retrieved from the two wells on June 3, 2008 (22 days later), and replaced with only one PDB in each well, set at the middle level The second set of PDBs was retrieved on June 18, 2008 (15 days after deployment), and replaced with a third set (middle level only) that has not yet been retrieved.

After retrieval, each PDB was opened and the contents were transferred to 40-ml VOA vials with hydrochloric acid preservative. The samples were then labeled, placed on ice in a sample cooler, and shipped by overnight delivery service to ESC for analysis of VOCs by U.S. EPA Method 8260B.

3.5 MONITORING WELL HYDRAULIC TESTING

After completion of groundwater sample collection from the overburden monitoring wells, hydraulic tests were performed on all 23 wells to evaluate the range of hydraulic conductivities in the formations (soil and weathered bedrock) monitored by these wells.

The tests performed, referred to as slug tests, were single-well, rapid drawdown tests. During each slug test, the static water level (SWL) was first measured with a WLI and then recorded. A 2-inch disposable bailer was then used to bail a small amount of water (approximately three bailers, or 0.75 gallons) from the well, of sufficient quantity to cause a measurable water level displacement in a short period of time (30 to 60 seconds). In two of the faster recovering wells (MW-2 and MW-12A), a submersible Whale-brand pump was used to quickly evacuate 2 to 3 gallons of water in less than a minute. A WLI and stopwatch were used to collect water level measurements at frequent intervals, recording water level recovery in the well. Measurements were begun immediately after removal of the last bailer of water and continued for approximately one half-hour after baildown, or until 90 percent recovery was reached, whichever came first.

The data collected are provided in the tables and graphs in Appendix F. The method used for slug test analysis was developed by Bouwer and Rice (1976), as updated by Bouwer (1989). Parameter definitions, estimated values, and equations used in the analysis are provided in Appendix F.

The Bouwer and Rice method offers two alternative analysis procedures: one for fully penetrating and one for partially penetrating wells. At this site, all of the wells are installed in relatively stratified silty clay soils and weathered bedrock consisting of shale and thin beds of limestone. Given the horizontal stratification and the relatively low permeability of the screened formation materials, minimal hydraulic influence from the deeper sections of the formation would be expected. Therefore, the procedure for fully penetrating wells was used to analyze the data.

The data analysis procedures used in deriving a hydraulic conductivity estimate from the field data were as follows:

- Well geometry parameters were estimated from the well construction log. The inner casing radius, r, was adjusted for sand pack porosity as recommended by Bouwer (1989).

- The data collected were converted to residual drawdown (H = DTW - SWL) using the measured depth-to-water at a given time (DTW) and the static depth-to-water measurement (SWL) made prior to testing.

- Normalized drawdown (or percent of maximum displacement) was calculated by dividing each value of residual drawdown by the maximum displacement measured in the well.

- Residual drawdown was graphed over time for the test at each well on a semi-log plot (residual drawdown on the logarithmic scale).

- A straight line was fitted to the graphed data for each well. Generally, the early data follow a steep line representing sand-pack drainage. Intermediate data are considered most representative for the formation. During the last stage of the test, recovery tapers off, and the data are no longer useful for analysis purposes. Coordinates for the fitted straight line (Ho, Ht and t) were recorded on each graph.

- A spreadsheet containing the Bouwer and Rice (1976) equation was used to automatically estimate hydraulic conductivity from the well geometry parameters and the straight line coordinates.

The test data for the 23 wells followed typical slug test response curves and yielded hydraulic conductivity values ranging across three orders of magnitude, from 0.011 to 3.7 feet per day (ft/day), or 3.8×10^{-6} to 1.3×10^{-3} centimeters per second (cm/sec).

Hydraulic conductivities in a formation are found generally to be log-normally distributed, so that the geometric mean of several tests can be considered representative for the formation (Freeze and Cherry, 1979). The geometric mean of the test values at this site is 0.13 ft/day (4.6×10^{-6} cm/sec).

Values in this range are typical for silt, sand-silt-clay mixtures, and very fine sands (Todd, 1980). Wells finished in this formation with 10 feet of saturated screen and 8 feet of available drawdown would be expected to yield only about 0.05 gallons per minute (gpm) under standard pumping conditions, based on a specific capacity formula given by Driscoll (1986, p. 1021).

The following is a list of the technical publications referenced in the discussion above:

Bouwer, H., 1989. *The Bouwer and Rice Slug Test - An Update.* Ground Water, v.27, p. 304-309.

Bouwer, H., and Rice, R., 1976. *A Slug Test for Determining Hydraulic Conductivity of Unconfined Aquifers with Completely or Partially Penetrating Wells.* Water Resources Research, v.12, p. 423-428.

Driscoll, F.G., 1986. *Groundwater and Wells*. Johnson Division, St. Paul, Minnesota, 1089 p.

Freeze, R.A., and Cherry, J.A., 1979. *Groundwater*. Prentice Hall, Englewood Cliffs, New Jersey, 604 p.

Todd, D.K., 1980. *Groundwater Hydrology*. John Wiley and Sons, New York, New York, 535 p.

3.6 INVESTIGATION-DERIVED WASTE

The following investigation derived wastes (IDW) were generated and staged on-site pending proper disposal:

- 17 drums of soil cuttings,
- 1 drum of decontamination solids/liquids (from decontamination of augers by steam cleaning), and
- 5 drums of purge water from monitoring wells.

Arrangements for appropriate offsite disposal of these wastes are currently in process.

4.0 DISCUSSION OF FINDINGS

4.1 HYDROGEOLOGIC SETTING

4.1.1 Geology of the Shallow Subsurface

Investigations to date at the RBTC LDB#1 site have focused primarily on the shallow subsurface. Information on subsurface materials has been obtained from logs of 10 hand auger borings (SB-1 through SB-10) and 82 DPT borings (GP-1 through GP-82) advanced across the site. All of the soil boring logs from the current as well as previous investigations are included in Appendix C.

Due to the lithology and the variable weathering of the underlying bedrock, soil borings advanced at the site have encountered refusal at varying depths, ranging from 5 to 25 feet bgs. In general, materials in the shallow subsurface have been found to consist of brown silty clay (locally mottled gray and brown) overlying bedrock consisting of gray (and locally brown and green) fissile shale. Fragments of limestone and some sandstone have been recovered in soil samples and cuttings, and are consistent with observations of nearby excavations and published literature indicating that thin beds of limestone and sandstone are interlayered with the shale.

DPT borings typically penetrated into the top of bedrock from a couple of inches up to about two feet prior to encountering refusal. In many locations, a transitional zone up to 5 feet thick is observed at the soil-bedrock interface, just above the top of bedrock, consisting of dry flakey clay with obvious relict shale partings. Table 5 is a table listing the depth to refusal, and the depth to the top of shale, in all of the borings advanced at the site. The top of the shale was interpreted to be the level where relatively unweathered shale was logged in the DPT borings (or where refusal was encountered when rock was not observed). Table 5 also lists estimated elevations for refusal depth and the top of shale, where known.

Figure 5 is a contour map of the bedrock surface, drawn from the data in Table 5. The HSA borings that were advanced to install monitoring wells generally penetrated further into the bedrock than the DPT borings, which were advanced by less powerful machines. The bottom elevations for the HSA borings (which were not sampled or logged for lithology) are shown in parentheses on the map in Figure 5. The HSA borings appear to have penetrated up to 10 feet into relatively unweathered bedrock at the MW-2 location, up to 9 feet at the MW-3 and MW-5 locations, and up to 5 feet at the MW-11A and MW-12A locations. Figure 6 is a north-south cross-section along the west side of the property, illustrating schematically the topography and subsurface lithology of the site, and the vertical settings of selected wells.

The bedrock surface contour map in Figure 5 illustrates that, overall, the top of the bedrock slopes to the north-northeast, consistent with pre-development topography. A less weathered high in the bedrock surface occurs under the southeast portion of the plant building, and may represent the divide between the two pre-construction surface drainageways that were located east and west of the plant building footprint. Two troughs in the bedrock surface occur cross-wise to the natural drainage pattern: one trending northwest under the southern portion of the plant, and one trending east-west under the northern part of the property, between the plant and Embry Drive. Although these troughs may represent channels eroded in the bedrock surface by streamflow, they could also represent zones of weakness and increased weathering associated with fracturing or faulting of the underlying bedrock.

4.1.2 Shallow Groundwater Conditions

Although the silty clay overburden soils appeared dry when first sampled, most of the DPT borings that penetrated at least 5 feet into the overburden (bgs) eventually produced water. Groundwater recovery in the DPT borings equipped with temporary monitoring wells generally took hours to days, however. Three of the DPT borings (GP-23, GP-35 and GP-47, all located in the area of the bedrock high under the southeast portion of the plant) never produced sufficient water for field testing by the Color-Tec method, despite being left open for five to seven days. It can be concluded that most of the groundwater flow in the overburden and shallow bedrock zone occurs in localized zones within the vertical profile, primarily via selected horizontal zones where the shale partings or relict structures in the clay are relatively open, and possibly also through zones of vertical or near-vertical fracturing in the bedrock and overlying clay.

A total of 23 permanent monitoring wells have been installed at the site, including two well pairs (MW-11B/A and MW-12B/A), and measuring points on the top of the well casing at each well have been tied by survey to the regional datum (NAVD). The well construction details for these wells are summarized in Table 2, and the available water level gauging data for the permanent monitoring wells are summarized in Table 3.

Figure 7 is an interpreted groundwater elevation contour map based on data collected in the permanent monitoring wells on June 18, 2008. The stabilized groundwater elevation levels that were estimated in the temporary monitoring wells in May 2008, summarized in Appendix D, were found to be generally consistent with the interpretation in Figure 7. Groundwater levels are generally highest under the elevated south-southwestern portion of the property, and from there the water table slopes to the north-northeast, diverging slightly from the centerline of the plant to the west and to the northeast. The hydraulic gradient across the site includes a 10-foot drop under the southern portion of the property (between MW-1 and MW-18), and a 6-foot drop from the south end of the plant to Embry Dive on the north.

Figure 8 is a set of hydrographs (graphs of water levels over time) for the period of the field investigations conducted in May and June 2008. Included are the monitoring wells installed in 2007 (MW-1 through MW-8) and selected monitoring wells installed in May-June 2008. Generally, the hydrographs demonstrate that groundwater conditions in the shallow flow system at the site are relatively constant. Specifically, short-term water level fluctuations are relatively minor (on the order of a foot or less in individual wells over the 50-day monitoring period), and consistent hydraulic relationships are maintained between the wells. The highest water level elevations are measured in MW-1 (off the scale of the graphs), and in new wells MW-18 (at the toe of the slope) and MW-10 (inside the plant near the southwest corner). The lowest levels are measured in MW-6, MW-7 and MW-5 (on the northwest corner of the property), and in MW-13 (on the north-northeast edge of the property). MW-3, MW-2, MW-11, MW-12, MW-4, MW-8, MW-5, MW-14 all exhibit intermediate water level elevations, in order from highest to lowest.

One anomaly is apparent from a comparison between the water levels in MW-18, MW-2 and MW-10, as illustrated by the groundwater contour map in Figure 7 and the hydrographs in Figure 8. Whereas a distinct slope in water levels to the north-northeast is apparent across most of the site, the water levels in MW-18 and MW-10 are almost the same, and the water level in MW-2 (between the other two wells) is lower. This anomaly may represent the effect of an upward gradient and springs emerging from the bedrock under the plant floor in the area of MW-10, a downward hydraulic gradient and downward flow in the vicinity of MW-2, subsurface drainage into a French drain system leading to the western ditch, or a combination of the three. The result is that shallow groundwater flow on the south side of the plant flows to the west, and around the area of low permeability under the southeast portion of the plant, and then to the north.

The hydrographs in Figure 8 also illustrate the hydraulic relationships in the two well pairs installed in the shallow flow system, MW-11B/A and MW-12B/A. The deeper well in each pair is designated "A" and is screened from about 10 to 15 feet bgs, across the top of the shale. The shallow well in each pair is designated "B", and is screened in the silty clay overburden from about 4 to 9 feet bgs. At both levels, the water level in MW-11 is higher than the water level in MW-12, indicating that the horizontal hydraulic gradient is to the north in both levels. However, the water levels in both of the shallow wells remained almost flat during the monitoring period, whereas the water levels in the deep wells fell in response to drying meteorological conditions (decreasing precipitation and increasing evapotranspiration) during the same period. In MW-11, the vertical hydraulic gradient between the two levels started upward and changed to downward as the water level in the deep well fell faster than in the shallow well. In MW-12, the hydraulic gradient remained upward, but the magnitude of the gradient decreased as the water level in the deep well fell.

4.1.3 Distribution of Hydraulic Conductivity

MACTEC performed hydraulic testing (using slug test methods) in all 23 of the permanent monitoring wells after sampling was completed in June 2008. The testing data and results are summarized in Appendix F. The calculated hydraulic conductivity values for the 23 wells ranged across three orders of magnitude, from 0.011 to 3.7 ft/day, or 3.8 $\times 10^{-6}$ to 1.3 $\times 10^{-3}$ cm/sec. The geometric mean of the values was 0.13 ft/day (4.6 $\times 10^{-6}$ cm/sec), which is on the high end of the typical range for clayey soils.

The distribution of hydraulic conductivity values by well is illustrated on the bar graph on the first page of Appendix F. The wells that tested with the highest values of hydraulic conductivity (>1 ft/day) were MW-7, MW-3, MW-12A, and MW-4, mostly on the west side of the site. The wells that tested with the lowest values (<0.02 ft/day) were also on the west side: MW-10, MW-15, MW-16, and MW-17. In general, there was no obvious correlation between hydraulic conductivity and area of the site.

The second page of Appendix F includes a graph of hydraulic conductivity compared to the mid-screen elevation in each of the tested wells. If the outliers (MW-1 and MW-5) are disregarded, the data appear to indicate that there is a slight increase in hydraulic conductivity with depth of screen placement. The four wells with the highest tested hydraulic conductivities (MW-7, MW-3, MW-12A, and MW-4) are screened below the 700 ft NAVD level (mid-screen elevation). All of the wells screened above the 700 ft NAVD level have hydraulic conductivity values <0.10 ft/day. This is interpreted to mean that, close to the soil bedrock interface, the presence of open partings and limestone and sandstone interbeds in the less weathered bedrock imparts additional secondary permeability to this zone compared to the silty clay overburden.

4.1.4 Deep Former Supply Wells

Two former supply wells are present on the southwest portion of the property outside the plant building. These wells are installed to total estimated depths of 367 feet bgs (PW-1) and 475 feet bgs (PW-2), more than 300 feet below the shallow zone investigated and monitored with soil borings and monitoring wells.

In order to avoid disturbing the PDB samplers that were placed in these wells, they were gauged only once in the May-June 2008 field period, on June 18, 2008 after the second set of PDBs was retrieved. The water level data collected on June 18, 2008 were generally consistent with the water level measurements taken in these wells in 2007. In PW-1, the water level is 21-22 feet below the top of casing, and about 15 feet lower than the static water level in nearby shallow monitoring well MW-1. However, the water level elevation in this well is about 704 feet NAVD, within the range of water levels measured in the shallow monitoring wells. This would appear to indicate that the vertical gradient between the shallow flow system and the system monitored by this well (between 213 and 367 feet below the top of casing) is minimal. The water level in the deeper well (PW-2) is 53 to 55 feet below the top of casing (at an elevation of about 658 feet NAVD). This is almost 50 feet lower than the water level in PW-1 and the shallow monitoring wells, indicating that there is a significant downward vertical gradient between the shallow flow system (as well as the level monitored by PW-1) and the level monitored by PW-2 (down to 475 feet bgs).

4.2 SOIL ANALYTICAL RESULTS

4.2.1 General

The laboratory reports for the soil samples collected as part of the May 2008 field screening study are included in Appendix G. Table 6 is a summary of the analytical results for all of the soil samples collected at the site since 2004, including:

- 15 soil samples collected from borings SB-1 through SB-10, in several areas of the site inside and outside the building, in November 2004, from depths between 1 and 6 feet bgs;

- 11 soil samples collected in March 2007 from DPT borings GP-1 through GP-10, in the area of the former hazardous waste accumulation building, primarily from depths of 0 to 2 ft bgs;

- 8 soil samples collected in March 2007 from DPT borings GP-11 through GP-18, in the flat bed grinder area on the southern end of the building, from depths of 0 to 2 ft bgs;

- 33 soil samples collected in May 2008 from DPT borings GP-19 through GP-76, throughout the site as part of the field screening study, from variable depths both above and within the saturated zone, as deep as 12-14 feet in GP-39.

Only the parameters detected in at least one sample have been listed in Table 6. The detected compounds have been grouped and listed in the following categories: CVOCs, other volatile organic compounds, TPH-O&G, and metals.

Also listed in Table 6 for each of the parameters are the U.S. EPA Region 9 preliminary remediation goals (PRGs) of October 2002 for residential and industrial soils, the risk-based screening levels that are used by the KDWM for initial screening of soil. There are no PRGs established by U.S. EPA Region 9 for TPH in soil; the values shown are risk-based guidance levels provided by the KDWM. In the table, all detected values are shown in bold, and analytical results exceeding the residential PRGs are shaded.

4.2.2 Discussion of Soil Results

Soil analytical results are discussed by parameter category in the following sections.

4.2.2.1 Chlorinated Volatile Organic Compounds

A total of 59 soil samples from the RBTC LDB#1 site have been analyzed for VOCs between 2004 and 2008, including 25 collected in the May 2008 field screening study. The CVOCs detected in the soil samples include chlorinated ethenes (TCE and related compounds) and, to a lesser extent, ethanes (TCA and related compounds). Total CVOC concentrations have been computed for each sample, and are shown at the bottom of the CVOC list in Table 6; they range from 0 (none detected) to 110 mg/kg (in the sample from GP-26, 7.5 to 10 ft bgs). TCE is the only CVOC compound detected in soil samples at concentrations exceeding the residential PRG (0.053 mg/kg) as well as the industrial PRG (0.11 mg/kg). TCE concentrations have been detected in 15 samples (out of the 59 analyzed) above the residential PRG, and in 13 samples over the industrial PRG, up to the maximum concentration of 110 mg/kg in the sample from GP-26.

TCE concentrations exceeding the PRGs have been detected in soil collected from the former hazardous waste accumulation building west of the main plant building (SB-3 and GP-1), the flat bed grinder area inside at the south end of the building (SB-8), the southwest corner of the plant, or Maintenance Area (SB-7 and GP-44), the west-central portion of the building interior including the area of the Henry Filter pit and former degreaser (GP-19, GP-26, GP-27, GP-28, GP-37, GP-39, and GP-53), and the northern (east and center) portion of the building interior (GP-29 and GP-31). Most of these samples were collected from depths close to or within the saturated zone. The three samples with the highest TCE and total CVOC concentrations (>1 mg/kg) were collected from the west-central portion of the plant including the former degreaser: GP-28, 5-7.5 ft bgs (2.8 mg/kg total CVOCs), GP-37, 10-12 ft bgs (3.2 mg/kg total CVOCs), and GP-26, 7.5 to 10 ft bgs (110 mg/kg total CVOCs).

4.2.2.2 Other Volatile Organic Compounds

The other VOCs detected in selected soil samples at the RBTC LDB#1 site include compounds that may have been reported as artifacts of laboratory analyses (such as acetone and methylene chloride), and petroleum-related compounds such as ethylbenzene, xylenes, naphthalene and 1,2,4-trimethylbenzene. None of these compounds were reported at levels exceeding the residential or industrial PRGs.

4.2.2.3 TPH and Semivolatile Organic Compounds

TPH-O&G has been analyzed in selected soil samples, including 10 samples collected during the May 2008 field screening study. None of the soil samples collected in the field screening study, or in previous sampling, had an oily appearance. Nevertheless, TPH-O&G concentrations were reported in six out of the 10 samples collected in 2008 above the Kentucky guidance level of 100 mg/kg for residential soils, and in two samples above the guidance level of 250 mg/kg for industrial soils. Since 2004, TPH-O&G concentrations exceeding 100 mg/kg have been reported in soil samples collected in the hazardous waste accumulation building (SB-3 and GP-1 through GP-10), near the southwest corner of the building interior, or Maintenance Area (SB-7 and GP-44), in the circular saw blade grinding area in the central portion of the building (GP-36 and GP-52), under the north central part of the building (GP-51), close to the Henry Filter pit (GP-53), and outside on the west side of the plant (GP-76). The samples with the highest reported values (1,600 and 4,500 mg/kg, respectively in GP-3 and GP-4, were collected just below the pavement in the hazardous waste accumulation building.

Semivolatile organic compounds (SVOCs), including polynuclear aromatic hydrocarbons (PAHs), were analyzed in 15 soil samples collected from DPT and hand-augered borings in 2004, and in one sample collected during the field screening study in May 2008 (GP-29, 5-7.5 ft bgs, based on odor). No SVOCs were detected in the sample from GP-29 or in the samples collected in 2004, except for one sample (SB-9, 1-2 ft bgs), which had three phthalates reported, including one (bis (2-ethyl hexyl) phthalate, at 38 mg/kg) slightly above the residential PRG (35 mg/kg), but below the industrial PRG (120 mg/kg).

4.2.2.4 Metals

No metals were analyzed in the soil samples collected in 2008. Nine metals were analyzed in the samples collected in 2004. Metals concentrations in the 2004 samples were below the residential PRGs, except for arsenic in all samples, and chromium in one sample (SB-6, 1-2 ft bgs). The Generic Statewide Ambient Background concentration for arsenic in Kentucky (95^{th} percentile) is 21.2 mg/kg. None of the arsenic concentrations exceeded this level. The chromium concentration reported for the sample from SB-6 was 322 mg/kg, which exceeds the Generic Statewide Ambient Background concentration for chromium (40 mg/kg) as well as the residential PRG (210 mg/kg), but is below the industrial PRG (450 mg/kg).

4.3 WATER ANALYTICAL RESULTS

4.3.1 General

The laboratory reports for the groundwater samples collected from temporary monitoring wells as part of the May 2008 field screening study are included in Appendix G. The laboratory results for the groundwater samples collected in June 2008 from the permanent monitoring wells and from the former supply wells are provided in Appendices H and I, respectively.

The analytical results for all water samples collected since 2008 have been organized into three tables that summarize only the compounds detected in at least one water sample: Table 7 contains the results for all of the water samples collected from surface water ditches, seeps and temporary wells since 2004, including 46 groundwater samples analyzed as part of the May 2008 field screening study. Table 8 summarizes the results for groundwater samples collected from permanent monitoring wells, and Table 9 contains the results for the samples collected from the former supply wells. In these tables, detected values are shown in bold.

For comparison to the analytical results, Tables 7 through 9 also list screening levels for groundwater in Kentucky, i.e., the federal maximum contaminant levels (MCLs) for drinking water, and the U.S. EPA Region 9 PRGs of October 2002 for tap water. Analytical results that exceed the MCL (or for a compound with no MCL, the PRG) are shaded.

4.3.2 Discussion of VOC Results for Water Samples

CVOCs are the constituents most commonly detected at concentrations exceeding the screening levels (i.e., the MCL, or for a compound with no MCL, the PRG) in groundwater at the RBTC LDB#1 site. CVOC exceedances were detected in the standing water sample collected under the floor in the area of the Henry Filter pit (HF-1) and in one temporary well (TW-1) in 2004 (Table 7), in all eight of the permanent monitoring wells installed in 2007 (Table 8), and in both of the deep production wells (Table 8). The following discussions review the analytical results for all VOCs by category of water sample.

4.3.2.1 Shallow Groundwater

The field screening study undertaken in May 2008 had as its primary objective to delineate the source area(s) for CVOCs in groundwater at the site. Groundwater samples were obtained from all but five of the 64 DPT borings advanced across the site, and screened for the presence of chlorinated ethenes using the Color-Tec method. These results were used to guide the additional investigations on a day-by-day basis during the field screening study. In addition, for verification and quantification purposes, groundwater samples were collected for laboratory analysis of VOCs from 46 of the temporary wells installed in DPT borings. Those analytical results are summarized in Table 7, and compared to the Color-Tec results in Appendix D (Table D-3 and Figure D-3).

The CVOC compounds in groundwater most commonly exceeding screening levels for groundwater have been the chlorinated ethenes TCE, cis-1,2-DCE, 1,1-DCE and PCE, as well as vinyl chloride (VC). Chlorinated ethanes, i.e., TCA, 1,1,2- trichloroethane (1,12-TCA), 1,1-dichloroethane (1,1-DCA) and 1,2-dichloroethane (1,2-DCA,) were reported at concentrations exceeding screening levels in only five samples (from GP-27, GP-53, GP-54, GP-74 and GP-76). Carbon tetrachloride was detected in one sample (GP-76) at a concentration exceeding the screening level.

As discussed above in Section 3.2.5, more than half of the analytical results for total CVOCs in groundwater exceeded 1 mg/L, 12 out of 46 exceeded 10 mg/L, and four of those (from GP-26, GP-42, GP-53, and GP-27) exceeded 100 mg/L. The groundwater samples exceeding 100 mg/L were clustered in a north-south trending area of elevated CVOCs, identified as the probable source area, running under the western portion of the building, from just south of MW-5 through the area of the former degreaser (now the Henry Filter pit) and encompassing portions of the main air compressor room and the blade wash equipment area through GP-42 on the south. This area includes GP-26, the boring that yielded both the samples with the highest concentrations of CVOCs (primarily TCE): 110 mg/kg in soil, and 421 mg/L in groundwater.

The field screening study results were used to guide the placement of permanent monitoring wells in May-June 2008. To supplement the eight monitoring wells installed in March 2007, 15 additional wells were installed in the shallow flow zone (overburden and shallow bedrock) in May-June 2008, including two well pairs in the source area, two additional interior wells south and northeast of the source area, and nine new wells installed outside to further define groundwater concentrations on the periphery. All 23 of the permanent monitoring wells were sampled in June 2008, and the results (integrated with previous results) are summarized by well in Table 8.

A comparison of the 2007 and 2008 results for the wells installed in 2007 (MW-1 through MW-8) indicates that concentrations decreased by an order of magnitude in MW-1 (the upgradient well on the southwest corner of the property), but remained in the same order of magnitude (either up or down) in the other wells. Out of 23 samples collected in 2008, only one (from MW-19) had no detectable CVOCs. Due to the very slow recovery rate in that well immediately after installation,those results may not be representative, and should be confirmed in future sampling rounds. Besides that well, only two other samples collected in 2008 (from MW-6 and MW-15, on the downgradient corner of the property to the northwest) had reported concentrations of all VOCs (including CVOCs) below the groundwater screening levels. Samples from 14 wells (out of 23) had total CVOC concentrations above 1.0 mg/L, of which 7 had concentrations above 10 mg/L, and 2 (from MW-11B and MW-12B, the shallow wells in the interior well pairs) had concentrations above 100 mg/L. In each of the well pairs installed in the shallow flow system, the total CVOC concentration in the deeper well (screened at 10-15 ft bgs) was slightly lower than in the shallow well (screened at 4-9 ft bgs): 60 compared to 109 mg/L in the MW-11B/A pair, and 83 compared to 124 mg/L in the MW-12B/A pair.

Figure 9 is a map of total CVOC concentrations in shallow groundwater beneath the site based on the data collected from the temporary and permanent monitoring wells in May-June 2008. Based on this comprehensive data set, the highest concentrations of total CVOCs (>1 mg/L) are concentrated under the northwestern interior portion of the plant, and extend outside to the western side of the property, and to the northeast portion of the property in the area of MW-8 and MW-14. The mechanism that caused migration of CVOCs from the source area on the northwest of the plant building to the northeast side of the property (cross-gradient to groundwater flow) is poorly understood. It appears to represent a combined effect of man made conduits and bedrock structure. The extent of CVOC impacts on the northeast portion of the property is not fully defined based on the existing well network. The low concentrations mapped under the southeast portion of the plant appear to be related to the low permeability and general lack of groundwater flow in this area of high bedrock. The relatively low concentrations of total CVOCs in MW-10, near the southwest corner of the plant, may be related to dilution with spring water emerging under the floor of the plant in that area.

Besides the CVOCs, other VOCs have been reported intermittently in shallow groundwater samples. They include acetone, chloroform and methylene chloride, which are frequently reported as artifacts of laboratory analysis. The apparent concentrations of these laboratory artifacts become amplified when samples are diluted to bring the other compounds into quantifiable range. As a result, several samples had concentrations of these compounds reported in excess of groundwater screening levels.

Petroleum-related VOCs were also detected in some shallow groundwater samples. Naphthalene, benzene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene were reported in a few samples at concentrations exceeding groundwater screening levels, but generally much lower than the CVOC concentrations.

4.3.2.2 Seeps and Surface Water

Two surface water samples (SW-1 and SW-2) were collected in November 2004 from the ditch on the western side of the property, and one sample (SEEP) was collected in April 2004 from a seep entering the concrete-lined ditch running along the front (north edge) of the property. The results are summarized in the first three columns of Table 7. The surface water samples had no detectable VOCs, and the seep sample had a relatively low level of cis-1,2-DCE (0.029 mg/L) as well as a reported detection of acetone.

4.3.2.3 Former Supply Wells

The first sample from the former supply wells was collected in November 2004 from PW-1, using a bailer and without removing the existing pump or purging the well. In March 2007, the existing pumps were removed and a clean submersible pump was used to purge at least one well volume from each of the two wells before samples were collected with a bailer. Two sets of samples were collected in 2008 using passive diffusion bag (PDB) samplers. For the first set, three PDBs were placed in each well at three different levels (top, middle and bottom), each approximately 50 feet apart from the next, and left to equilibrate for 22 days prior to removal. For the second set, one PDB was placed in each well, at the middle level, and left to equilibrate for 15 days prior to removal. Additional information on the PDB sampling method is provided above in Section 3.4.3.

Analytical results for the two deep former supply wells are summarized in Table 9. The results for samples collected in 2007 and 2008 using two different methods have been relatively consistent. Chlorinated ethenes and ethanes have been detected in samples from both wells, and the following chlorinated ethenes have been detected in excess of the groundwater screening levels in both wells: TCE, cis-1,2-DCE, 1,1-DCE, and VC. Disregarding the first sample collected in 2004 (before the well was purged), total CVOC concentrations have ranged 0.74 to 1.0 mg/L in PW-1, and 2.1 to 4.5 mg/L in PW-2. The difference in concentrations was not found to be significant between the three vertical levels, and the highest concentrations were detected in the samples collected from PDB samplers left for 22 days.

Other VOCs reported in these samples included very low levels of benzene and naphthalene in one sample from PW-1, as well as low levels of acetone and methylene chloride (probable laboratory artifacts) in selected samples.

4.3.3 Discussion of TPH Results for Water Samples

Kentucky does not currently have a single consistent screening level for TPH in water, although the preferred detection limit is 0.050 mg/L. The method used for TPH analysis at this site has been Method 1664A, a method that totalizes petroleum hydrocarbons in the gasoline and diesel range. The typical reporting limit for the analysis has been 5 mg/L.

Five samples collected from surface water and temporary wells in 2004 were analyzed for TPH-O&G, and none had detectable levels. One sample was collected from standing water under the floor in the area of the Henry Filter pit, and was found to contain 8.0 mg/L of TPH-O&G (Table 7). Due to sample volume and time constraints, none of the groundwater samples collected in the May 2008 field screening study from temporary monitoring wells were analyzed for TPH. Due to the sampling method (using PDBs), samples for TPH analysis were also not collected in the former production wells.

TPH-O&G samples were collected from the permanent monitoring wells in June 2008, following the methods described above in Section 3.4.2, and the results are summarized in Table 8. Of the 23 samples collected, only five had detectable levels of TPH. The maximum concentration detected was 5.1 mg/L in well MW-13.

4.3.4 Discussion of Metals Results for Water Samples

Eight metals were analyzed in the seven water samples collected from surface water, standing water and temporary wells in 2004 (Table 7). None were detected above the groundwater screening levels (MCLs or PRGs) in six samples. One sample (from TW-1) had elevated metals, including four above groundwater screening levels. This was interpreted to be related to sample turbidity. Due to well construction, sample volume and time constraints, none of the groundwater samples collected in the field screening study from temporary monitoring wells in May 2008 were analyzed for metals. Only one sample from a former production well (PW-1, sampled in 2004) has been analyzed for metals (Table 8), and none of the eight metals analyzed were detected.

Eight metals were also analyzed in the samples collected from eight permanent monitoring wells in March 2007 (Table 8). Of these, only one sample had a value above any of the corresponding screening levels (the sample from MW-1, with a lead concentration of 0.043 mg/L compared to a federal action level of 0.015 mg/L). Groundwater samples were collected from all 23 of the permanent monitoring wells in June 2008, taking precautions to limit the turbidity of the samples as described above in Section 3.4.2, and were submitted to the laboratory for analysis of three metals: lead (the metal that had an exceedance in 2007), and chromium and nickel (metals potentially associated with plating). None exceeded the groundwater screening levels in any of the monitoring well samples collected in 2008.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The following sections summarize the findings, conclusions and recommendations developed by MACTEC from information obtained during the May-June 2008 additional investigations, as well as the two preceding Phase II ESA (initial and additional) sampling events previously conducted by MACTEC in November 2004 and March 2007.

5.1 CONCLUSIONS

5.1.1 Receptor Survey

MACTEC did not identify any human receptors or sensitive ecological resources potentially affected by water quality impacts at the RBTC LDB#1 site.

Public water supply has been available in the area of the site for over 30 years. No water wells currently supplying residences, businesses or farms were identified within a mile of the site, and the closest active supply wells appear to be about 4 miles from the site.

Based on this information, there are no affected populations that would require immediate mitigation of impacts.

5.1.2 Hydrogeologic Setting

A total of 23 monitoring wells have been installed at the site at relatively shallow depths and have screens set just above or across the soil-bedrock interface. Two well pairs (with screens set at about 4 to 9 and 10 to 15 feet bgs) were installed in the source area of CVOC contamination identified under the west central-portion of the plant. The findings related to the hydrogeology of the shallow flow zone can be summarized as follows:

- The shallow subsurface at the site consists of silty clay overburden soils grading downward into shale bedrock with thin hard rock (limestone and sandstone) interbeds. Relatively unweathered rock is encountered at variable depths ranging from 4.5 to 18.5 feet bgs.

- Most of the flow in the shallow groundwater zone appears to occur in localized intervals in the vertical profile where shale partings in the rock or relict structures in the clay are relatively open.

- Slug tests performed on the monitoring wells yielded hydraulic conductivity values ranging from 0.011 to 3.7 ft/day, on the upper end of the range for clayey soil. Hydraulic conductivity is highly variable in the shallow flow zone but in general appears to increase somewhat with depth of screen setting.

- The upper bedrock zone (at the soil-bedrock interface) appears to be somewhat more permeable and more responsive to changing recharge conditions than the overlying silty clay overburden. Therefore, this zone appears to offer the primary pathway for lateral groundwater flow and contaminant migration.

- During relatively wet periods, an upward vertical hydraulic gradient occurs between the upper bedrock zone and the overlying clay overburden in the CVOC source area beneath the west-central plant. This gradient decreases or reverses under drying conditions.

- The overall direction of groundwater flow in the shallow zone is from south-southwest to the north and northeast, in the general direction of the topographic gradient and pre-construction drainage. A bedrock high occurs under the southeastern portion of the plant, probably representing a pre-construction topographic divide, and little to no groundwater flow occurs in this area.

- An anomalous area on the southwest corner of the plant (characterized by a depressed water level at MW-2 and an elevated water level at MW-10) may be caused by an upward vertical gradient at MW-10, a downward vertical gradient at MW-2, a French Drain system in the area leading to the western drainage ditch, or a combination of the three.

Two former water supply wells (PW-1 and PW-2) are present at the plant, and are finished at total depths of 375 and 475 feet bgs, respectively. The water level in former supply well PW-1, which has a total depth of 375 feet, is only slightly lower than the water level elevations in the shallow flow system. The water level in PW-2 (the deeper well) is almost 50 feet lower than the shallow zone water level elevations, indicating that there is a significant downward vertical gradient in the deeper bedrock.

5.1.3 Constituents of Concern and Distribution in Soil

Based on the analytical data collected over three phases of investigation, the constituents of concern (COCs) in soil at the site are:

- TCE, the only VOC detected above residential and industrial PRGs in soil; and

- TPH, which occurs locally over the guidance levels of 100 mg/kg (residential) and 250 mg/kg (industrial), and up to 4,500 mg/kg, in selected areas of the site.

Chromium exceeded the residential PRG, but not the industrial PRG, in one shallow soil sample only collected in the area of the former plating shop. A deeper soil sample in this area also had chromium detected, but at concentrations below the residential and industrial PRGs. Therefore, chromium is not considered a COC in soil. None of the other VOCs, SVOCs or metals would be considered COCs based on the low frequency of detection and the occasional and inconsistent exceedances of soil screening levels.

The following conclusions can be drawn from a review of the soil analytical data:

- The source area of TCE impacts, under the west central portion of the plant, appears to be associated with past materials handling processes in the area of the former degreaser (on the north side of the Henry Filter pit), and outside the original building, which ended just south of the plating room.

- Minor source areas for TCE were also identified at the former Hazardous Waste Accumulation Building, the Flat Bed Grinder Area, the Maintenance Area (southwest corner of the plant), and the northern (east and center) portion of the building interior. TCE impacts in these areas are also likely related to historic materials handling processes.

- The highest concentrations of TPH-O&G have been identified just below the pavement at the former Hazardous Waste Accumulation Building. Minor source areas of TPH-O&G were also identified in the Maintenance Area, Circular Saw Blade Grinding Area, near the Henry Filter pit, in the northern portion of the plant, and outside the plant to the west. These releases are also likely related to materials handling processes.

5.1.4 Constituents of Concern and Distribution in Groundwater

COCs in groundwater identified on the basis of the cumulative analytical data are:

- The CVOCs TCE, cis-1,2-DCE, 1,1,-DCE and VC, based on concentrations and frequency of detection over the groundwater screening levels.

None of the other VOCs would be considered COCs for groundwater at the site, based on occasional and inconsistent detections and exceedances of groundwater screening levels. TPH-O&G was not detected in the majority of groundwater samples, and metals were not detected in groundwater samples above the groundwater screening levels. It can be concluded that, although source areas of TPH-O&G and a small area of chromium impacts, have been identified in soil, these source areas are not of sufficient strength to significantly impact groundwater.

With regard to CVOCs, the following conclusions can be drawn from a review of the groundwater analytical data:

- CVOC impacts in shallow groundwater are widespread across the site. The highest groundwater concentrations (>100 mg/L) are associated with the soil source area identified under the west-central portion of the plant, in the area of the former degreaser (north side of the Henry Filter pit) and the south wall of the original plant.

- CVOC concentrations have been found to be higher in shallow groundwater than in soil in the source area (e.g., 421 mg/L compared to 110 mg/kg in GP-26), and concentrations in the rest of the plume area are generally one or more orders of magnitude higher higher in groundwater than in soil.

- The presence of TCE degradation products in the plume, which generally increase as a percent of total CVOCs with distance from the source area, indicates reductive dechlorination (natural attenuation) is occurring.

- The full extent of CVOC impacts in shallow groundwater has not been defined to the east and northeast, or at the western boundary (where further definition in the direction of CH#1 is impractical due to site topography).

- The mechanisms for contaminant migration in the area of the shallow plume are not completely understood, but appear to be related to the combined effects of man-made conduits (subsurface utilities) and bedrock structure (vertical fracturing and troughs).

- In the source area under the west-central portion of the plant, total CVOC concentrations in groundwater decrease with depth, from the silty clay overburden to the upper bedrock, based on the results from one round of groundwater samples collected from two sets of well pairs.

- CVOCs have been detected in both the deep former supply wells, up to total CVOC concentrations of 1.0 mg/L in PW-1, and up to 4.5 mg/L in PW-2 (compared to a maximum concentration of 8.0 mg/L in nearby shallow well MW-2). The presence of CVOCs in the deep wells may have resulted from deep fracturing in combination with a downward vertical gradient, or possibly from incomplete sealing of the former supply well casings, which may have acted as conduits for downward migration from the shallow zone.

5.1.5 Implications for Closure and Data Gaps

Based on the findings of the receptor survey, no receptors have been identified that would be potentially impacted by current site conditions. Therefore, the focus of any closure approach for the site should be prevention of further migration of CVOCs and protection of future building occupants, rather than full mitigation of historic impacts. Due to the presence of higher concentrations of CVOCs in groundwater than in soil, site conditions favor corrective actions focusing on groundwater.

Prior to finalizing the closure approach for the site, the following data gaps remain to be investigated:

- The distribution of CVOC impacts in groundwater on the northeast portion of the property;
- The distribution of CVOCs with depth; and
- The connection between the deep former supply wells and the shallow flow system, and the mechanism for contaminant migration from the shallow to the deep system.

5.2 PROPOSED ACTIONS

A prospective purchaser has expressed interest in using the property for commercial storage and light manufacturing in the near future. For that reason, RBTC intends to expedite investigation and corrective action at this site. The actions proposed to be conducted in the next phase include both additional investigations and pilot testing of potential source area remedial technologies, as described in the following sections.

5.2.1 Additional Site Investigations

5.2.1.1 Additional Definition of Extent (Northeast)

In order to complete the definition of extent of COC impacts in groundwater on the northeast portion of the site, MACTEC proposes to conduct a two-step investigation similar to the one conducted in May-June 2008, including an initial field screening study using temporary wells in DPT borings, followed by the installation of up to three more permanent monitoring wells in the shallow groundwater zone.

5.2.1.2 Mid-Level Monitoring Wells

In order to further define the extent of CVOC impacts with depth, MACTEC proposes to install at least four additional monitoring wells at a mid-level depth, on the order of 50 to 60 feet bgs. Prior to finalizing the planned locations and depths for these wells, MACTEC will update the Open

Records Request and file review previously conducted of site investigations performed at the CH#1 facility immediately to the west. The updated review will focus particularly on stratigraphic and hydrogeologic information collected on the CH#1 site from deeper zones below the shallow groundwater flow zone.

It is anticipated that four wells will be installed at the mid-level, and will be located close to existing shallow monitoring wells outside the plant, in order to evaluate vertical hydraulic gradients as well as the distribution of CVOCs with depth in key areas of the site, but outside the source area.

The mid-level wells will be installed using a double casing approach. A large diameter (8 or 10-inch) borehole will be drilled down to 25-30 ft bgs, and a 6-inch or 8-inch PVC outer casing will be grouted into the hole with cement. After the cement has set up, a smaller diameter (4-inch or 6-inch) borehole will be drilled through the outer casing down to the finished level. A 2-inch diameter PVC casing string, including a 10-foot long factory-slotted PVC screen and PVC riser will be installed in the hole. The annular space will be backfilled with silica sand to about 1 foot above the top of screen, and then grouted with bentonite up into the outer casing, and sealed with concrete at the surface.

5.2.1.3 Groundwater Monitoring

After the new shallow and mid-level monitoring wells are installed, a full round of sampling will be performed including the 23 existing wells and the new wells. The wells will be sampled by conventional methods (using a bailer or submersible pump for purging, and a bailer for sample collection), and the samples will be analyzed for VOCs by U.S. EPA Method 8260B.

After completion of sampling, slug tests will be performed in the new wells. All new wells will be tied by survey to NAVD, and at least three full rounds of water level gauging will be conducted concurrently with the groundwater sampling and pumping test activities.

5.2.1.4 Deep Well Pumping Test

The pathways followed by the CVOCs that are currently detected in the deep former supply wells (PW-1 and PW-2) are not completely understood from currently available information. Based on concentration trends, PW-2 appears to be closer to the source, and may actually have provided the primary conduit for migration of CVOCs from the shallow zone to the deeper zones monitored by these wells. In order to evaluate the hydraulic relationship between the deep wells and nearby shallow wells and the trends in concentrations in both zones (if any) in response to pumping, MACTEC proposes to conduct a long-term pumping test of PW-2. The pumping test will include the following:

- Continuous pumping from PW-2, onsite treatment by air stripping, and discharge to the public sewer.
- Pumping rate to be determined based on pump sizing, treatment system capacity, and POTW requirements, expected to be between 6 and 20 gpm).
- Pumping duration to be determined based on early analytical results, expected to be between 2 weeks and one month.
- Groundwater levels to be measured in PW-2, PW-1, MW-2 and MW-1, and associated mid-level monitoring wells, prior to pumping, several times daily for the first three days, at a decreasing frequency for the rest of the first two weeks, then weekly, then dropping to every two weeks after one month.
- Groundwater samples for VOC analysis will be collected from the closest monitoring wells immediately prior to start-up, one week after the start of pumping, and at the end of the test. Modified sampling using PDB samplers will be conducted in PW-1. Additional interim samples will be collected of the water pumped from PW-2, in order to document concentration trends in response to pumping.
- Sampling and analysis of the treated effluent collected prior to discharge, to be conducted in accordance with POTW pre-treatment requirements.

5.2.2 Source Area Remediation Pilot Testing

In order to expedite corrective action at the site, MACTEC proposes to conduct pilot testing of selected remedial technologies in the source area concurrently with the additional investigations described in the preceding section. A detailed work plan describing the proposed pilot testing activities will be submitted for KDWM approval under separate cover.

6.0 QUALIFICATIONS OF REPORT

The activities and evaluative approaches used in this assessment are consistent with those normally employed in environmental assessments and waste-management projects of this type. Our evaluation of site conditions has been based on our understanding of the site and project information, and the data obtained in our assessment. The general subsurface conditions interpreted in our evaluation have been based on interpolation of subsurface data between the sampling locations. Regardless of the thoroughness of an environmental site assessment, there is always the possibility that conditions between sampling locations will be different from those at specific locations due to the variability of subsurface conditions. Furthermore, the identification of contamination is based on the analytical parameters selected for the assessment, and does not necessarily address all conceivable forms of contamination.

Our report presents a summary of information known to MACTEC concerning the project site which MACTEC considered pertinent to the scope of work and stated project objective. MACTEC has assembled data produced by itself and others and used that information to make analyses of site conditions. MACTEC has performed this investigation with the care and skill ordinarily used by members of the environmental consulting profession practicing under similar conditions. The conclusions presented herein are those that are deemed pertinent by MACTEC based upon the assumed accuracy of the available information. No other warranty, expressed or implied, is made as to the professional advice included in this report. The information presented in this report is not intended for any use other than the stated objectives of the project.

TABLES

Table 1
Geologic Column
RBTC LDB#1, Leitchfield, Kentucky
MACTEC Project 6680-04-9537-03

Approx. Elevation (ft NGVD)	Approx. Depth (ft bgs)	Approx. Thickness (ft)	Description	Groundwater Availability
710	0		Ground Surface	Ground Surface
		5	**Soil: weathered from Leitchfield Formation over Glen Dean Limestone** Shale, sandstone, siltstone, limestone and limestone conglomerate. Shale, dark gray to olive gray, yellowish-green and grayish green; clayey to sandy; grades laterally into sandstone locally, interbedded with siltstone and thin beds of sandstone and limestone.	
705	5			
		25	**Glen Dean Limestone** Limestone and shale: Limestone, gray, fine-grained to coarse crystalline, thin- to very thick-bedded; upper beds commonly argillaceous and weather to rubble and thin slabs; scraggly chert on some weathered surfaces. Shale, greenish to dark gray, weathers to dark gray; occurs as partings and beds of various thickness interbeded with thin beds of limestone in upper part.	**Glen Dean Limestone** Yields little or no water. Most wells in upland areas are inadequate for a domestic supply.
680	30			
		30-45	**Hardinsburg Sandstone** Sandstone and shale: Sandstone, white to light gray and yellowish-brown, weathers grayish orange/pink and brown; very fine to fine grained, silty; very thin to very thick bedded, in part cross-bedded; friable. Shale, grayish-green, limy.	**Hardinsburg Sandstone** Yields little or no water. Most wells in upland areas are inadequate for a domestic supply.
640	70			
		20-40	**Haney Limestone (Member of Golconda Formation)** Limestone, gray, fine- to coarse-crystalline; oolitic at a few localities; abundant fossils; thin to thick bedded.	**Haney Limestone and Big Clifty Sandstone (Members of Golconda Formation)** Deep wells that penetrate the sandstone formations near perennial stream level may produce enough for a domestic supply (more than 500 gallons per day). Close to outcrop areas, particularly near major escarpments, yields from perched water bodies generally are low and not dependable. Minor spring horizons occur on discontinuous layers of shale near the base of the sandstones. The most conspicuous springs are those that discharge from the base of the Big Clifty Sandstone. These are the "dripping springs" of the Dripping Springs Escarpment. Many of these springs go dry during the late fall and summer, and very few are adequate for a domestic supply. Limestone formations yield small to adequate supplies from solution openings. In lowland areas bordering streams, some wells produce enough for a domestic supply. Many springs occur at the base of the limestones where they crop out on escarpments and hillsides.
610	100			
		40-70	**Big Clifty Sandstone (Member of Golconda Formation)** Sandstone and shale: Sandstone, white to grayish-ornge, iron-stained; fine to coarse grained; thin to very thick bedded, in part strongly cross-bedded; locally asphaltic near base; forms prominent cliffs. Shale, gray to greenish-gray.	
550	160			
		+/-140	**Girkin Formation** Limestone and Shale: Limestone, gray and grayish-brown, lithographic to coarse-grained, in part oolitic, thin to thick-bedded.	**Girkin Formation** Most wells in upland areas are inadequate for domestic use; however, some wells yield enough water for a domestic supply (more than 500 gallons per day) from solution openings. Some wells produce more than 5 gallons per minute from large solution openings. Near outcrop areas, particularly near major escarpments, yields generally are inadequate during dry periods.
410	300			
		70-130	**Ste. Genevieve Limestone** Limestone, white to light-gray, oolitic, cherty.	**Ste. Genevieve Limestone** The Ste. Genevieve yields more than 50 gallons per minute to wells from large solution openings in karst areas. Wells that do not intersect karst conduits generally are inadequate for domestic use. The Ste. Genevieve contains the major caverns of the Mammoth Cave area, which have large connected subsurface streams. Springs have low flows ranging from less than 10 gallons per minute to more than 1,500 gallons per minute occurring at or near stream level or near the contact with the underlying St. Louis Limestone. Smaller springs discharge from perched water bodies in the upland area, but many go dry during late summer and fall.
310	400			
		50+	**St. Louis Limestone** Limestone, gray, very fine to fine-grained, cherty, argillaceous and dolomitic, with some beds of skeletal limestone.	**St. Louis Limestone** The St. Louis yields more than 50 gallons per minute to wells from large openings in karst areas. Most wells penetrate some solution openings, but in high areas above perennial streams, yields are often inadequate for domestic supply. Yields of wells close to major streams are large where solution openings are penetrated, but most wells near major streams are inadequate. The St. Louis is a major spring horizon, with many springs flowing several hundred to several thousand gallons a minute. Many springs are used for public and industrial water supplies.

Prepared by: ALD 5/17/07
Checked by: GSW 1/23/08

Table 2
Well Construction Summary
RBTC LDB #1, Leitchfield, Kentucky
MACTEC Project 6680-04-9537-03

Well ID	KDOW AKGWA #	Completion Date	Inner Casing Diameter (in)	Boring Depth (ft BGS)	Sounded Well Depth (ft BMP)	Length of Perforated Section (ft)	Ground Surface Elevation (ft NAVD)	Measuring Point Elevation (ft NAVD)	Casing Stick-Up (ft AGS)	Top of Screen Elevation (ft NAVD)	Mid-Screen Elevation (ft NAVD)	Bottom of Well Elevation (ft NAVD)
PW-1	0002-0656	4/17/1987	8	367	300+	154	724.4	725.58	1.2	513	436	359
PW-2	N/A	est. 1979	10	est. 475	300+	---	711.3	712.36	1.1	---	---	est. 236
MW-1	8005-3213	3/21/2007	2	17.8	17.4	9.4	723.9	723.51	-0.4	715.5	710.8	706.1
MW-2	8005-3214	3/15/2007	2	17.8	17.4	9.4	711.4	710.98	-0.4	703.0	698.3	693.6
MW-3	8005-3215	3/14/2007	2	17.5	16.9	9.4	710.5	710.02	-0.5	702.5	697.8	693.1
MW-4	8005-3216	3/14/2007	2	14.5	13.8	7.0	709.5	709.10	-0.4	702.3	698.8	695.3
MW-5	8005-3217	3/14/2007	2	24.5	23.6	9.4	707.2	706.78	-0.4	692.6	687.9	683.2
MW-6	8005-3218	3/21/2007	2	10.0	9.6	4.8	704.1	703.66	-0.4	698.8	696.4	694.0
MW-7	8005-3219	3/15/2007	2	13.7	12.5	5.6	703.3	702.54	-0.7	695.6	692.8	690.0
MW-8	8005-3220	3/15/2007	2	20.0	19.0	9.4	709.1	708.71	-0.4	699.1	694.4	689.7
MW-9	8005-3705	5/27/2008	2	16.8	15.5	9.4	711.3	710.91	-0.4	704.8	700.1	695.4
MW-10	8005-3710	5/27/2008	2	9.3	9.1	9.4	711.3	710.95	-0.3	711.3	706.6	701.9
MW-11A	8005-3708	5/28/2008	2	15.0	14.8	4.8	711.2	710.87	-0.4	700.9	703.6	696.1
MW-11B	8005-3709	5/28/2008	2	8.8	8.5	4.5	711.3	710.87	-0.4	706.9	704.8	702.4
MW-12A	8005-3706	5/28/2008	2	15.5	15.5	4.5	711.3	710.89	-0.4	699.9	697.6	695.4
MW-12B	8005-3707	5/28/2008	2	9.0	8.9	4.5	711.3	710.76	-0.5	706.3	704.1	701.8
MW-13	8005-3721	6/2/2008	2	12.8	12.5	4.5	705.5	705.19	-0.3	697.2	695.0	692.7
MW-14	8005-3725	6/2/2008	2	14.5	14.0	9.4	706.5	706.25	-0.3	701.6	696.9	692.2
MW-15	8005-3729	6/2/2008	2	9.0	8.6	4.5	702.9	702.66	-0.3	698.6	696.3	694.1
MW-16	8005-3722	6/2/2008	2	14.0	12.7	9.7	707.4	706.74	-0.6	703.7	698.9	694.0
MW-17	8005-3726	6/2/2008	2	14.5	14.0	9.4	710.3	709.96	-0.3	705.4	700.7	696.0
MW-18	8005-3730	6/3/2008	2	7.0	6.6	2.8	711.7	711.13	-0.6	707.3	705.9	704.5
MW-19	8005-3723	6/2/2008	2	9.0	8.8	4.8	710.6	710.16	-0.4	706.1	703.7	701.3
MW-20	8005-3727	6/2/2008	2	12.5	11.7	4.8	712.0	711.30	-0.7	704.4	702.0	699.6
MW-21	8005-3724	6/2/2008	2	13.5	13.0	4.8	709.2	708.86	-0.4	700.6	698.2	695.8

Notes

in = inches
MP = measuring point
GS = ground/floor surface
WLE = water level elevation
--- = not available

ft = feet
BMP = below measuring point
BGS = below ground surface
NAVD = North American Vertical Datum of 1988

Prepared by: ALD 7/2/08
Checked by: WCG 7/2/08

Table 3
Water Level Summary - Permanent Monitoring Wells, Former Supply Wells and Sumps
RBTC LDB #1, Leitchfield, Kentucky
MACTEC Project No. 6680-04-9537

Field ID / *MP Elevation*	PW-1 725.58	PW-2 712.36	WWTP-A 710.4	WWTP-C 710.3	Stand-Pipe 711.73	MW-1 723.51	MW-2 710.98	MW-3 710.02	MW-4 709.10	MW-5 706.78	MW-6 703.66	MW-7 702.54	MW-8 708.71	MW-9 710.91
DEPTH TO WATER (FT BMP)														
13-Mar-07	28.55	---	---	---	---	---	---	---	---	---	---	---	---	---
14-Mar-07	---	53.27	---	---	---	---	---	---	---	---	---	---	---	---
22-Mar-07	---	---	---	---	---	1.85	3.73	2.76	3.95	4.42	2.74	2.80	4.82	---
18-Apr-07	21.95	53.21	---	---	3.20	5.31	2.98	1.94	4.04	3.82	3.12	2.23	4.90	---
13-May-08	---	---	5.85	5.82	4.63	4.50	3.81	2.67	4.52	4.37	3.03	2.87	4.63	---
19-May-08	---	---	5.83	5.78	3.06	3.55	3.63	2.48	4.44	4.09	3.06	2.71	4.53	---
21-May-08	---	---	5.86	5.80	3.05	3.94	3.70	2.58	4.50	4.25	3.31	2.95	4.64	---
30-May-08	---	---	---	---	---	---	---	---	---	---	---	---	---	6.18
03-Jun-08	---	---	5.81	5.87	3.06	3.74	3.03	1.91	4.43	3.51	3.15	1.98	4.51	5.95
04-Jun-08	---	---	---	---	---	---	2.97	1.97	4.44	---	---	---	---	---
05-Jun-08	---	---	---	---	---	---	---	---	---	3.66	3.33	2.23	4.70	---
06-Jun-08	---	---	---	---	---	4.38	---	---	---	---	---	---	---	---
09-Jun-08	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10-Jun-08	---	---	---	---	---	---	---	---	---	---	---	---	---	6.33
11-Jun-08	---	---	---	---	---	---	---	---	---	---	---	---	---	---
16-Jun-08	---	---	---			11.61	3.20	2.19	4.48	3.67	3.46	2.40	4.82	
18-Jun-08	21.14	55.38	5.84	5.75	3.11	11.72	3.25	2.16	4.54	3.78	3.55	2.51	4.98	6.39
19-Jun-08	---	---	---	---	---	---	---	---	---	---	---	---	---	---
WATER LEVEL ELEVATIONS (FT NAVD)														
13-Mar-07	697.03	---	---	---	---	---	---	---	---	---	---	---	---	---
14-Mar-07	---	659.09	---	---	---	---	---	---	---	---	---	---	---	---
22-Mar-07	---	---	---	---		721.66	707.25	707.26	705.15	702.36	700.92	699.74	703.89	---
18-Apr-07	703.63	659.15	---	---	708.53	718.20	708.00	708.08	705.06	702.96	700.54	700.31	703.81	---
13-May-08	---	---	704.6	704.5	707.10	719.01	707.17	707.35	704.58	702.41	700.63	699.67	704.08	---
19-May-08	---	---	704.6	704.5	708.67	719.96	707.35	707.54	704.66	702.69	700.60	699.83	704.18	---
21-May-08	---	---	704.5	704.5	708.68	719.57	707.28	707.44	704.60	702.53	700.35	699.59	704.07	---
03-Jun-08	---	---	704.6	704.4	708.67	719.77	707.95	708.11	704.67	703.27	700.51	700.56	704.20	704.96
18-Jun-08	704.44	656.98	704.6	704.6	708.62	711.79 NR	707.73	707.86	704.56	703.00	700.11	700.03	703.73	704.52
19-Jun-08	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Notes

MP = measuring point
WLE = water level elevation
BMP = below measuring point
NAVD = North American Vertical Datum of 1988
--- = no data available
NR = non-representative water level condition (well still recovering)

Table 3
Water Level Summary - Permanent Monitoring Wells, Former Supply Wells and Sumps
RBTC LDB #1, Leitchfield, Kentucky
MACTEC Project No. 6680-04-9537

Field ID	MW-10	MW-11A	MW-11B	MW-12A	MW-12B	MW-13	MW-14	MW-15	MW-16	MW-17	MW-18	MW-19	MW-20	MW-21
MP Elevation	710.95	710.87	710.87	710.89	710.76	705.19	706.25	702.66	706.74	709.96	711.13	710.16	711.30	708.86
DEPTH TO WATER (FT BMP)														
13-Mar-07	---	---	---	---	---	---	---	---	---	---	---	---	---	---
14-Mar-07	---	---	---	---	---	---	---	---	---	---	---	---	---	---
22-Mar-07	---	---	---	---	---	---	---	---	---	---	---	---	---	---
18-Apr-07	---	---	---	---	---	---	---	---	---	---	---	---	---	---
13-May-08	---	---	---	---	---	---	---	---	---	---	---	---	---	---
19-May-08	---	---	---	---	---	---	---	---	---	---	---	---	---	---
21-May-08	---	---	---	---	---	---	---	---	---	---	---	---	---	---
30-May-08	3.50	3.57	3.81	3.83	4.33	---	---	---	---	---	---	---	---	---
03-Jun-08	2.15	3.34	3.48	3.53	4.07	---	---	---	---	---	---	---	---	---
04-Jun-08	---	---	---	---	---	2.95	2.96	3.08	2.94	13.23	5.85	8.52	4.43	11.92
05-Jun-08	---	---	---	---	---	---	---	---	---	---	---	---	---	---
06-Jun-08	2.18	3.58	3.56	3.81	4.19	---	---	---	---	---	---	---	---	---
09-Jun-08	---	---	---	---	---	2.97	3.28	2.82	2.78	6.27	2.81	8.40	2.67	8.21
10-Jun-08	2.17	---	---	3.89	4.18	---	---	---	---	---	---	---	---	---
11-Jun-08	---	---	---	---	---	---	---	---	---	4.86	2.41	8.25	2.68	11.07
16-Jun-08	---	---	---	---	---	---	---	---	---	---	---	---	---	---
18-Jun-08	2.25	3.71	3.50	3.98	4.17	3.07	3.30	2.90	2.89	3.01	2.40	8.16	2.88	7.24
19-Jun-08	---	---	---	4.08	4.19	3.14	3.37	2.96	2.94	2.91	2.33	8.01	2.97	6.63
WATER LEVEL ELEVATIONS (FT NAVD)														
13-Mar-07	---	---	---	---	---	---	---	---	---	---	---	---	---	---
14-Mar-07	---	---	---	---	---	---	---	---	---	---	---	---	---	---
22-Mar-07	---	---	---	---	---	---	---	---	---	---	---	---	---	---
18-Apr-07	---	---	---	---	---	---	---	---	---	---	---	---	---	---
13-May-08	---	---	---	---	---	---	---	---	---	---	---	---	---	---
19-May-08	---	---	---	---	---	---	---	---	---	---	---	---	---	---
21-May-08	---	---	---	---	---	---	---	---	---	---	---	---	---	---
03-Jun-08	708.80	707.53	707.39	707.36	706.69	---	---	---	---	---	---	---	---	---
18-Jun-08	708.70	707.16	707.37	706.91	706.59	702.12	702.95	699.76	703.85	706.95	708.73	702.00 NR	708.42	701.62 NR
19-Jun-08	---	---	---	706.81	706.57	702.05	702.88	699.70	703.80	707.05	708.80	702.15 NR	708.33	702.23 NR

Notes

MP = measuring point
WLE = water level elevation
BMP = below measuring point
NAVD = North American Vertical Datum of 1988
--- = no data available
NR = non-representative water level condition (well still recovering)

Prepared by: GSW 6/30/08
Checked by: ALD 7/2/08

Table 4
Groundwater Field Parameter Data from Low-Flow Sampling, June 2008
RBTC LDB #1, Leitchfield, Kentucky
MACTEC Project No. 6680-04-9537

Well No.	Date	Time	Purge Rate (ml/min)	Depth to Water (ft)	Drawdown (ft)	Specific Capacity (L/min/ft)	pH (S.U.)	Temp-erature (°C)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	ORP (mv)	Turbidity (NTU)
MW-1	6/6/2008	9:05	static	4.38								
MW-1	6/6/2008	9:50	145	9.38	5.00	0.03	5.08	17.04	0.222	4.41	178.3	18
MW-1	6/6/2008	9:55	145	10.25	5.87	0.02	5.09	17.01	0.221	4.23	182.7	36
MW-1	6/6/2008	10:00	140	11.45	7.07	0.02	5.08	16.90	0.221	3.78	188.0	47
MW-1	VOC/Pb sample time	15:18	Samples collected 6/11/08 with a bailer due to increasing turbidity from pumping									
MW-1	TPH sample time	15:21										
MW-2	6/4/2008	8:15	static	2.97								
MW-2	6/4/2008	9:55	270	3.25	0.28	0.96	7.21	17.71	0.728	2.03	140.1	2
MW-2	6/4/2008	10:00	280	3.25	0.28	1.00	7.21	17.65	0.728	2.33	140.2	1
MW-2	6/4/2008	10:05	270	3.26	0.29	0.93	7.21	17.73	0.728	2.39	140.1	2
MW-2	VOC/Pb sample time	10:12										
MW-2	TPH sample time	15:00										
MW-3	6/4/2008	10:44	static	1.97								
MW-3	6/4/2008	11:55	270	2.50	0.53	0.51	7.28	17.34	0.523	8.40	111.8	3
MW-3	6/4/2008	12:00	270	2.50	0.53	0.51	7.29	17.39	0.543	8.27	111.6	2
MW-3	6/4/2008	12:05	270	2.50	0.53	0.51	7.29	17.36	0.540	8.00	111.0	3
MW-3	VOC/Pb sample time	12:05										
MW-3	TPH sample time	15:20										
MW-4	6/4/2008	14:00	static	4.44								
MW-4	6/4/2008	14:20	250	5.09	0.65	0.38	6.99	19.16	0.624	2.49	-57.7	2
MW-4	6/4/2008	14:25	250	5.11	0.67	0.37	6.98	19.07	0.623	2.34	-53.7	1
MW-4	6/4/2008	14:30	250	5.15	0.71	0.35	6.98	19.08	0.635	2.40	-50.6	1
MW-4	VOC/Pb sample time	14:35										
MW-4	TPH sample time	15:30										
MW-5	6/5/2008	8:15	static	3.66								
MW-5	6/5/2008	9:40	260	4.84	1.18	0.22	7.10	17.27	1.263	2.90	133.0	1
MW-5	6/5/2008	9:45	260	4.84	1.18	0.22	7.10	17.32	1.263	2.65	133.3	1
MW-5	6/5/2008	9:50	260	4.85	1.19	0.22	7.10	17.37	1.255	2.91	133.3	1
MW-5	VOC/Pb sample time	9:50										
MW-5	TPH sample time	14:20										

Table 4
Groundwater Field Parameter Data from Low-Flow Sampling, June 2008
RBTC LDB #1, Leitchfield, Kentucky
MACTEC Project No. 6680-04-9537

Well No.	Date	Time	Purge Rate (ml/min)	Depth to Water (ft)	Drawdown (ft)	Specific Capacity (L/min/ft)	pH (S.U.)	Temp-erature (°C)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	ORP (mv)	Turbidity (NTU)
MW-6	6/5/2008	10:10	static	3.33								
MW-6 (1)	6/5/2008	11:20	160	5.65	2.32	0.07	6.94	19.33	0.692	2.24	133.7	2
MW-6	6/5/2008	12:40	160	4.68	1.35	0.12	6.94	20.19	0.699	1.83	96.6	1
MW-6	6/5/2008	12:45	170	4.81	1.48	0.11	6.86	19.61	0.673	1.55	101.9	0
MW-6	VOC/Pb sample time	12:45										
MW-6	TPH sample time	14:30										
MW-7	6/5/2008	13:02	static	2.23								
MW-7	6/5/2008	13:35	270	2.55	0.32	0.84	6.99	18.17	1.059	0.22	102.0	1
MW-7	6/5/2008	13:40	270	2.55	0.32	0.84	6.99	18.06	1.053	0.21	97.8	1
MW-7	6/5/2008	13:45	270	2.57	0.34	0.79	6.99	18.06	1.047	0.23	94.3	1
MW-7	VOC/Pb sample time	13:45										
MW-7	TPH sample time	14:40										
MW-8	6/5/2008	14:03	static	4.70								
MW-8	6/5/2008	15:10	210	8.06	3.36	0.06	6.79	20.48	0.761	3.36	120.5	2
MW-8	6/5/2008	15:15	210	8.10	3.40	0.06	6.80	20.52	0.768	3.09	121.9	2
MW-8	6/5/2008	15:20	210	8.12	3.42	0.06	6.80	20.31	0.767	3.05	123.2	2
MW-8	VOC/Pb sample time	15:25										
MW-8	TPH sample time	15:40										
MW-9	6/10/2008	13:20	static	6.33								
MW-9	6/10/2008	14:00	210	7.30	0.97	0.22	7.03	19.50	1.211	3.60	141.9	1
MW-9	6/10/2008	14:05	205	7.45	1.12	0.18	7.03	19.47	1.207	3.56	142.7	1
MW-9	6/10/2008	14:10	210	7.54	1.21	0.17	7.03	19.47	1.203	3.54	143.0	1
MW-9	VOC/Pb sample time	14:10										
MW-9	TPH sample time	14:47										
MW-10	6/10/2008	12:15	static	2.17								
MW-10	6/10/2008	12:45	200	5.33	3.16	0.06	7.02	19.61	0.621	7.25	118.1	1
MW-10	6/10/2008	12:50	200	5.64	3.47	0.06	6.99	19.42	0.618	7.46	120.6	1
MW-10	6/10/2008	12:55	200	5.96	3.79	0.05	6.99	19.32	0.611	7.52	122.9	1
MW-10	VOC/Pb sample time	12:55										
MW-10	TPH sample time	14:38										

Table 4
Groundwater Field Parameter Data from Low-Flow Sampling, June 2008
RBTC LDB #1, Leitchfield, Kentucky
MACTEC Project No. 6680-04-9537

Well No.	Date	Time	Purge Rate (ml/min)	Depth to Water (ft)	Drawdown (ft)	Specific Capacity (L/min/ft)	pH (S.U.)	Temp-erature (°C)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	ORP (mv)	Turbidity (NTU)
MW-11A	6/6/2008	12:47	static	3.58								
MW-11A	6/6/2008	13:50	275	3.80	0.22	1.25	6.93	18.62	3.852	1.45	156.2	1
MW-11A	6/6/2008	13:55	275	3.81	0.23	1.20	6.93	18.64	3.833	1.48	157.2	1
MW-11A	6/6/2008	14:00	280	3.81	0.23	1.22	6.94	18.62	3.875	1.55	158.0	1
MW-11A	VOC/Pb sample time	14:05										
MW-11A	TPH sample time	15:50										
MW-11B	6/6/2008	15:00	static	3.56								
MW-11B	6/6/2008	15:20	270	4.67	1.11	0.24	8.64	19.21	26.59	9.06	189.6	3
MW-11B	6/6/2008	15:25	250	5.01	1.45	0.17	8.36	19.06	27.76	10.41	191.7	3
MW-11B	6/6/2008	15:30	250	5.43	1.87	0.13	8.10	18.99	28.64	10.69	193.4	4
MW-11B	VOC/Pb sample time	15:30										
MW-11B	TPH sample time	16:12										
MW-12A	6/10/2008	9:10	static	3.89								
MW-12A	6/10/2008	9:45	260	4.40	0.51	0.51	6.97	18.82	3.634	0.75	193.6	2
MW-12A	6/10/2008	9:50	270	4.43	0.54	0.50	6.98	18.79	3.636	0.85	191.0	2
MW-12A	6/10/2008	9:55	270	4.45	0.56	0.48	6.98	18.77	3.625	0.83	189.2	2
MW-12A	VOC/Pb sample time	9:55										
MW-12A	TPH sample time	14:23										
MW-12B	6/10/2008	10:15	static	4.18								
MW-12B	6/10/2008	10:45	200	5.10	0.92	0.22	6.48	19.43	2.968	6.00	167.0	1
MW-12B	6/10/2008	10:50	200	5.30	1.12	0.18	6.48	19.35	2.952	5.93	146.4	1
MW-12B	6/10/2008	10:55	200	5.49	1.31	0.15	6.46	19.35	2.950	5.92	119.6	2
MW-12B	VOC/Pb sample time	10:55										
MW-12B	TPH sample time	14:30										
MW-13	6/9/2008	9:18	static	2.97								
MW-13	6/9/2008	9:50	200	5.00	2.03	0.10	6.74	20.43	0.788	3.77	134.2	3
MW-13	6/9/2008	9:55	200	5.11	2.14	0.09	6.78	20.39	0.804	3.48	135.3	2
MW-13	6/9/2008	10:00	200	5.18	2.21	0.09	6.80	20.38	0.810	3.37	136.0	2
MW-13	VOC/Pb sample time	10:00										
MW-13	TPH sample time	14:00										

Table 4
Groundwater Field Parameter Data from Low-Flow Sampling, June 2008
RBTC LDB #1, Leitchfield, Kentucky
MACTEC Project No. 6680-04-9537

Well No.	Date	Time	Purge Rate (ml/min)	Depth to Water (ft)	Drawdown (ft)	Specific Capacity (L/min/ft)	pH (S.U.)	Temp-erature (°C)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	ORP (mv)	Turbidity (NTU)
MW-14	6/9/2008	10:25	static	3.28								
MW-14	6/9/2008	10:50	200	4.83	1.55	0.13	6.26	20.98	0.240	7.96	104.6	3
MW-14	6/9/2008	10:55	200	5.14	1.86	0.11	6.26	20.99	0.247	7.81	105.8	2
MW-14	6/9/2008	11:00	200	5.41	2.13	0.09	6.27	20.84	0.255	7.86	106.5	2
MW-14	VOC/Pb sample time	11:02										
MW-14	TPH sample time	14:07										
MW-15	6/9/2008	12:08	static	2.82								
MW-15	6/9/2008	12:30	240	4.03	1.21	0.20	7.38	20.72	1.202	7.14	124.8	1
MW-15	6/9/2008	12:35	180	4.21	1.39	0.13	7.39	20.98	1.203	7.30	128.9	1
MW-15	6/9/2008	12:40	170	4.40	1.58	0.11	7.40	20.86	1.216	7.51	132.3	2
MW-15	VOC/Pb sample time	12:43										
MW-15	TPH sample time	14:15										
MW-16	6/9/2008	13:03	static	2.78								
MW-16	6/9/2008	13:25	170	3.85	1.07	0.16	7.08	19.57	0.459	8..88	113.4	1
MW-16	6/9/2008	13:30	180	4.09	1.31	0.14	7.08	19.42	0.459	8.86	118.1	1
MW-16	6/9/2008	13:35	190	4.33	1.55	0.12	7.08	19.28	0.459	8.79	122.6	1
MW-16	VOC/Pb sample time	13:37										
MW-16	TPH sample time	14:25										
MW-17	6/11/2008	9:25	static	4.86								
MW-17	6/11/2008	10:25	210	6.11	1.25	0.17	6.80	147.0	0.672	7.11	147.0	2
MW-17	6/11/2008	10:30	210	6.43	1.57	0.13	6.76	149.1	0.681	7.13	149.1	2
MW-17	6/11/2008	10:35	210	6.68	1.82	0.12	6.72	150.8	0.684	7.15	150.8	2
MW-17	VOC/Pb sample time	10:37										
MW-17	TPH sample time	15:05										
MW-18	6/11/2008	11:05	static	2.41								
MW-18	6/11/2008	11:35	190	3.65	1.24	0.15	7.31	20.62	0.625	7.15	140.8	1
MW-18	6/11/2008	11:40	190	3.90	1.49	0.13	7.30	20.56	0.618	6.99	143.2	1
MW-18	6/11/2008	11:45	190	4.16	1.75	0.11	7.26	20.04	0.609	6.76	145.4	1
MW-18	VOC/Pb sample time	11:46										
MW-18	TPH sample time	15:20										

Table 4
Groundwater Field Parameter Data from Low-Flow Sampling, June 2008
RBTC LDB #1, Leitchfield, Kentucky
MACTEC Project No. 6680-04-9537

Well No.	Date	Time	Purge Rate *(ml/min)*	Depth to Water *(ft)*	Drawdown *(ft)*	Specific Capacity *(L/min/ft)*	pH *(S.U.)*	Temp-erature *(°C)*	Specific Conductance *(mS/cm)*	Dissolved Oxygen *(mg/L)*	ORP *(mv)*	Turbidity *(NTU)*
MW-20	6/11/2008	13:30	static	2.68								
MW-20	6/11/2008	14:15	180	7.08	4.40	0.04	9.14	19.50	0.470	6.55	118.3	1
MW-20	6/11/2008	14:20	180	7.30	4.62	0.04	9.31	19.32	0.460	6.29	120.9	1
MW-20	6/11/2008	14:25	170	7.62	4.94	0.03	9.81	19.38	0.467	5.54	119.0	2
MW-20	VOC/Pb sample time	14:26										
MW-20	TPH sample time	15:25										

Prepared by: GSW 6/13/08
Checked by: WCG 7/2/08

Notes:

(1) Due to excessive drawdown, MW-6 was allowed to recharge for 1 hour and 20 minutes before low-flow sampling was resumed
Due to low yield, wells MW-19 and MW-21 could not be sampled by low-flow methods. These wells were allowed to recover until 6/16/08, and samples were collected with bailers

(mg/L)	Milligrams per liter	*(ft)*	Feet
(mL/min)	Milliliters per minute	*(S.U.)*	Standard Units
(L/Min/ft)	Liters per minute per foot of drawdown	*(mv)*	Millivolts
(°C)	Degrees Celsius	*(NTU)*	Nephelometric Turbidity Units
(uS/cm)	MicroSiemens per Centimeter		

Table 5
Bedrock Surface Elevation Summary
RBTC LDB #1, Leitchfield, Kentucky
MACTEC Project 6680-04-9537-03

Boring ID	Drilling Type	Estimated Ground Surface Elevation (ft NAVD)	Depth To Refusal (ft BGS)	Estimated Refusal Elevation (ft NAVD)	Depth to Top of Shale (ft BGS)	Estimated Top of Shale Elevation (ft NAVD)
TW-1	HSA	709.5	14.0	695.5	R	695.5
TW-2	HSA	704.0	10.0	694.0	R	694.0
TW-3	HSA	704.0	11.0	693.0	R	693.0
TW-4	HSA	704.0	14.0	690.0	R	690.0
SB-1	DPT	710.5	7.0	703.5	R	703.5
SB-2	HA	710.5	5+	<705.5	5+	<705.5
SB-3	HA	710.5	5+	<705.5	5+	<705.5
SB-4	HA	711.3	5+	<706.3	5+	<706.3
SB-5	HA	711.3	6+	<705.3	6+	<705.3
SB-6	HA	711.3	5+	<706.3	5+	<706.3
SB-7	HA	711.2	7+	<704.2	7+	<704.2
SB-8	HA	711.2	5+	<706.2	5+	<706.2
SB-9	HA	711.2	5+	<706.2	5+	<706.2
SB-10	HA	711.2	3*	--	--	--
GP-1	DPT	710.5	10+	<700.5	10+	<700.5
GP-2	DPT	710.5	10+	<700.5	10+	<700.5
GP-3	DPT	710.5	10+	<700.5	10+	<700.5
GP-4	DPT	710.5	10+	<700.5	10+	<700.5
GP-5	DPT	710.5	10+	<700.5	10+	<700.5
GP-6	DPT	710.5	10+	<700.5	10+	<700.5
GP-7	DPT	710.5	10+	<700.5	10+	<700.5
GP-8	DPT	710.5	10+	<700.5	10+	<700.5
GP-9	DPT	710.5	10+	<700.5	10+	<700.5
GP-10	DPT	711.2	10+	<700.5	10+	<700.5
GP-11	DPT	711.2	8.5	702.7	R	702.7
GP-12	DPT	711.2	9.0	702.2	R	702.2
GP-13	DPT	711.2	8.0	703.2	R	703.2
GP-14	DPT	711.2	8.0	703.2	R	703.2
GP-15	DPT	711.2	8.0	703.2	R	703.2
GP-16	DPT	711.2	8.0	703.2	R	703.2
GP-17	DPT	711.2	8.0	703.2	R	703.2
GP-18	DPT	711.2	8.0	703.2	R	703.2
GP-19	DPT	711.3	10+	<701.3	10+	<701.3
GP-20	DPT	711.3	15+	<696.3	15+	<696.3
GP-21	DPT	711.3	10+	<701.3	10+	<701.3

Table 5
Bedrock Surface Elevation Summary
RBTC LDB #1, Leitchfield, Kentucky
MACTEC Project 6680-04-9537-03

Boring ID	Drilling Type	Estimated Ground Surface Elevation (ft NAVD)	Depth To Refusal (ft BGS)	Estimated Refusal Elevation (ft NAVD)	Depth to Top of Shale (ft BGS)	Estimated Top of Shale Elevation (ft NAVD)
GP-22	DPT	711.3	10+	<701.3	10+	<701.3
GP-23	DPT	711.2	8.0	703.2	R	703.2
GP-24	DPT	711.2	8.5	702.7	R	702.7
GP-25	DPT	711.2	8.0	703.2	R	703.2
GP-26	DPT	711.2	10+	<701.2	10+	<701.2
GP-27	DPT	711.3	20+	<691.3	20+	<691.3
GP-28	DPT	711.3	20.5	690.8	R	690.8
GP-29	DPT	711.3	17.5	693.8	R	693.8
GP-30	DPT	709.1	18.5	690.6	15.0	694.1
GP-31	DPT	711.3	15+	<696.3	11.5	699.8
GP-32	DPT	711.2	10+	<701.2	6.5	704.7
GP-33	DPT	711.2	10+	<701.2	8.0	703.2
GP-34	DPT	711.3	5.0	706.3	4.0	707.3
GP-35	DPT	711.2	8.0	703.2	6.0	705.2
GP-36	DPT	711.3	9.0	702.3	8.0	703.3
GP-37	DPT	711.3	14.0	697.3	13.8	697.5
GP-38	DPT	711.3	15+	<696.3	14.0	697.3
GP-39	DPT	711.3	14.0	697.3	13.7	697.6
GP-40	DPT	711.2	12.0	699.2	11.5	699.7
GP-41	DPT	711.2	14.0	697.2	12.0	699.2
GP-42	DPT	711.2	10+	<701.2	11.0	700.2
GP-43	DPT	711.2	9.0	702.2	8.0	703.2
GP-44	DPT	711.2	8.5	702.7	8.0	703.2
GP-45	DPT	711.2	8.5	702.7	8.2	703.0
GP-46	DPT	711.3	10+	<701.3	8.0	703.3
GP-47	DPT	711.3	9.5	701.8	8.0	703.3
GP-48	DPT	711.2	6.5	704.7	5.5	705.7
GP-49	DPT	710.4	1*	--	--	--
GP-50	DPT	711.3	18.5	692.8	R	692.8
GP-51	DPT	711.3	15+	<696.3	18.5	692.8
GP-52	DPT	711.3	9.0	702.3	7.5	703.8
GP-53	DPT	711.3	16.0	695.3	15.0	696.3
GP-54	DPT	711.3	14.0	697.3	13.5	697.8
GP-55	DPT	711.0	5.5	705.5	5.0	706.0
GP-56	DPT	711.0	5.0	706.0	4.0	707.0

Table 5
Bedrock Surface Elevation Summary
RBTC LDB #1, Leitchfield, Kentucky
MACTEC Project 6680-04-9537-03

Boring ID	Drilling Type	Estimated Ground Surface Elevation (ft NAVD)	Depth To Refusal (ft BGS)	Estimated Refusal Elevation (ft NAVD)	Depth to Top of Shale (ft BGS)	Estimated Top of Shale Elevation (ft NAVD)
GP-57	DPT	710.5	6.5	704.0	6.0	704.5
GP-58	DPT	710.5	9.0	701.5	8.0	702.5
GP-59	DPT	710.0	7.0	703.0	6.5	703.5
GP-60	DPT	710.0	9.3	700.8	9.0	701.0
GP-61	DPT	710.0	11.5	698.5	10.5	699.5
GP-62	DPT	709.5	14.5	695.0	14.0	695.5
GP-63	DPT	709.1	18.8	690.4	18.0	691.1
GP-64	DPT	706.5	14.5	692.0	18.5	688.0
GP-65	DPT	707.0	15.0	692.0	R	692.0
GP-66	DPT	704.0	15.0	689.0	14.0	690.0
GP-67	DPT	704.5	13.0	691.5	12.5	692.0
GP-68	DPT	704.5	14.5	690.0	14.0	690.5
GP-69	DPT	705.0	16.5	688.5	15.3	689.7
GP-70	DPT	706.0	15.0	691.0	14.0	692.0
GP-71	DPT	707.0	17.0	690.0	15.0	692.0
GP-72	DPT	709.0	15.0	694.0	14.5	694.5
GP-73	DPT	710.2	16.0	694.2	15.5	694.7
GP-74	DPT	710.5	17.0	693.5	16.0	694.5
GP-75	DPT	710.5	12.0	698.5	11.0	699.5
GP-76	DPT	710.5	13.0	697.5	12.5	698.0
GP-77	DPT	710.5	12.5	698.0	11.5	699.0
GP-78	DPT	710.5	10.0	700.5	8.5	702.0
GP-79	DPT	704.5	12.0	692.5	10.0	694.5
GP-80	DPT	711.5	7.0	704.5	6.3	705.2
GP-81	DPT	703.0	11.0	692.0	10.4	692.6
GP-82	DPT	704.5	14.0	690.5	10.5	694.0
MW-1	HSA	723.9	17.8	706.1	NL	--
MW-2	HSA	711.4	17.8	693.6	NL	--
MW-3	HSA	710.5	17.5	693.0	NL	--
MW-4	HSA	709.5	14.5	695.0	NL	--
MW-5	HSA	707.2	24.5	682.7	NL	--
MW-6	HSA	704.1	10.0	694.1	NL	--
MW-7	HSA	703.3	13.7	689.6	NL	--
MW-8	HSA	709.1	20.0	689.1	NL	--
MW-9	HSA	711.3	16.8	694.5	NL	--

Table 5
Bedrock Surface Elevation Summary
RBTC LDB #1, Leitchfield, Kentucky
MACTEC Project 6680-04-9537-03

Boring ID	Drilling Type	Estimated Ground Surface Elevation (ft NAVD)	Depth To Refusal (ft BGS)	Estimated Refusal Elevation (ft NAVD)	Depth to Top of Shale (ft BGS)	Estimated Top of Shale Elevation (ft NAVD)
MW-10	HSA	711.3	9.3	702.0	NL	--
MW-11A	HSA	711.2	15.0	696.2	11.0	700.2
MW-11B	HSA	711.3	--	--	NL	--
MW-12A	HSA	711.3	15.5	695.8	NL	--
MW-12B	HSA	711.3	--	--	NL	--
MW-13	HSA	705.5	12.8	692.7	NL	--
MW-14	HSA	706.5	14.5	692.0	NL	--
MW-15	HSA	702.9	9.0	693.9	NL	--
MW-16	HSA	707.4	14.0	693.4	NL	--
MW-17	HSA	710.3	14.5	695.8	NL	--
MW-18	HSA	711.7	7.0	704.7	NL	--
MW-19	HSA	710.6	9.0	701.6	NL	--
MW-20	HSA	712.0	12.5	699.5	NL	--
MW-21	HSA	709.2	13.5	695.7	NL	--

Notes:
HSA = Hollow-stem auger
HA = hand auger
DPT = Direct-push technology (Geoprobe® or equivalent)
* = Shallow refusal is anomalous, probably not representative of bedrock
R = Top of shale assumed to be at level of DPT refusal
NL = No lithologic log available
-- = No data available

Prepared by: ALD 7/30/08
Checked by: TSK 8/6/08

Table 6
Summary of Soil Analytical Results, 2004-2008
RBTC LDB #1, Leitchfield, Kentucky
MACTEC Project No. 6680-04-9537

			Field Sample ID	SB-1	SB-2	SB-3	SB-3	SB-4	SB-5	SB-6	SB-6	SB-7	SB-7	SB-8	SB-8
			Depth	2-3	1-2	1-2	4-5	1-2	2-3	1-2	4-5	1-2	6-7	1-2	4-5
			Sample Collection Date	11/17/04	11/17/04	11/17/04	11/17/04	11/17/04	11/18/04	11/18/04	11/18/04	11/18/04	11/18/04	11/18/04	11/18/04
	Units	***Res. PRG***	***Ind. PRG***												
Chlorinated Volatile Organic Compounds															
Tetrachloroethene	mg/kg	*1.5*	*3.4*	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Trichloroethene	mg/kg	*0.053*	*0.11*	< 0.010	< 0.010	< 0.010	**0.131**	< 0.010	< 0.010	**0.023**	< 0.010	**0.076**	< 0.010	**0.030**	**0.188**
1,1-Dichloroethene	mg/kg	*120*	*410*	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	**0.024**	**0.039**	< 0.010	< 0.010
cis-1,2-Dichloroethene	mg/kg	*43*	*150*	< 0.010	< 0.010	< 0.010	**0.112**	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	**0.075**	**0.054**
trans-1,2-Dichloroethene	mg/kg	*69*	*230*	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Vinyl Chloride	mg/kg	*0.079*	*0.75*	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
1,1,1-Trichloroethane	mg/kg	*1,200*	*1,200*	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
1,1-Dichloroethane	mg/kg	*510*	*1,700*	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	**0.259**	**0.018**	< 0.010
1,2-Dichloroethane	mg/kg	*0.28*	*0.6*	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Total CVOCs	mg/kg			0	0	0	***0.24***	0	0	***0.023***	0	***0.10***	***0.30***	***0.12***	***0.24***
Other Volatile Organic Compounds															
Acetone	mg/kg	*1,600*	*6,000*	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chloroform	mg/kg	*3.6*	*12*	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
2-Butanone (MEK)	mg/kg	*730*	*2,700*	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Methylene Chloride	mg/kg	*9.1*	*21*	**0.017**	**0.019**	**0.014**	< 0.010	< 0.010	< 0.010	**0.012**	< 0.010	< 0.010	< 0.010	**0.016**	< 0.010
1,1,2-Trichloro-1,2,2-trifluoroethane	mg/kg	*5,600*	*5,600*	---	---	---	---	---	---	---	---	---	---	---	---
n-Butylbenzene	mg/kg	*240*	*240*	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
sec-Butylbenzene	mg/kg	*220*	*220*	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Ethylbenzene	mg/kg	*8.9*	*20*	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Isopropylbenzene	mg/kg	*160*	*520*	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
p-Isopropyltoluene	mg/kg	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Naphthalene	mg/kg	*56*	*190*	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
n-Propylbenzene	mg/kg	*240*	*240*	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
1,2,3-Trichlorobenzene	mg/kg	---	---	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	**0.015**	< 0.010	< 0.010	< 0.010
1,2,4-Trimethylbenzene	mg/kg	*52*	*170*	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
1,2,3-Trimethylbenzene	mg/kg	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,3,5-Trimethylbenzene	mg/kg	*21*	*70*	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Xylenes, Total	mg/kg	*270*	*420*	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Total Petroleum Hydrocarbon															
TPH - Oil & Grease	mg/kg	*100*	*250*	< 150	< 150	**200**	< 150	< 150	< 150	< 150	< 150	**950**	< 150	< 150	< 150
Semivolatile Organic Compounds															
Di-n-butyl phthalate	mg/kg	---	---	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Bis (2-ethyl hexyl) phthalate	mg/kg	*35*	*120*	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Di-n-octyl phthalate	mg/kg	*2,400*	*25,000*	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Metals															
Arsenic	mg/kg	*0.39*	*1.6*	**1.17**	**7.71**	**4.77**	**7.48**	**6.67**	**5.53**	**5.32**	**5.87**	**6.49**	**3.76**	**4.39**	**1.23**
Barium	mg/kg	*5,400*	*67,000*	**46.2**	**59.6**	**76.7**	**54.3**	**60.6**	**60.4**	**57.4**	**43.9**	**63.0**	**79.2**	**84.3**	**86.0**
Cadmium	mg/kg	*37*	*450*	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Chromium	mg/kg	*210*	*450*	**11.2**	**20.7**	**20.7**	**17.3**	**21.1**	**24.4**	**322**	**17.7**	**16.4**	**29.7**	**13.4**	**24.0**
Lead	mg/kg	*400*	*800*	**12.0**	**19.2**	**20.8**	**13.3**	**18.5**	**34.5**	**18.0**	**14.4**	**14.1**	**12.3**	**17.1**	**15.9**
Mercury	mg/kg	*23*	*310*	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**0.56**	< 0.5	<0.5
Selenium	mg/kg	*390*	*5,100*	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**1.58**	< 0.5	**1.21**	< 0.5	**1.04**
Silver	mg/kg	*390*	*5,100*	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	**0.15**	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	mg/kg	*1,600*	*20,000*	**5.41**	**10.4**	**18.1**	**6.11**	**10.9**	**10.2**	**36.8**	**13.7**	**11.0**	**12.9**	**21.7**	**33.1**

Table 6
Summary of Soil Analytical Results, 2004-2008
RBTC LDB #1, Leitchfield, Kentucky
MACTEC Project No. 6680-04-9537

			Field Sample ID	SB-9	SB-9	SB-10	GP-1	GP-1	GP-2	GP-3	GP-4	GP-5	GP-6	GP-7	GP-8
			Depth	1-2	4-5	1-2	4-6	8-10	0-2	0-2	0-2	0-2	0-2	0-2	0-2
			Sample Collection Date	11/18/04	11/18/04	11/18/04	03/12/07	03/12/07	03/12/07	03/12/07	03/12/07	03/12/07	03/12/07	03/12/07	03/12/07
	Units	***Res. PRG***	***Ind. PRG***												
Chlorinated Volatile Organic Compounds															
Tetrachloroethene	mg/kg	*1.5*	*3.4*	<0.010	<0.010	<0.010	**0.018**	<0.10	<0.0050	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Trichloroethene	mg/kg	*0.053*	*0.11*	**0.035**	**0.045**	< 0.010	**0.49**	**0.52**	**0.0052**	<1.0	**0.0052**	<0.0050	**0.0026 J**	**0.0023 J**	<0.0050
1,1-Dichloroethene	mg/kg	*120*	*410*	< 0.010	< 0.010	< 0.010	**0.027**	<0.10	<0.0050	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
cis-1,2-Dichloroethene	mg/kg	*43*	*150*	< 0.010	**0.016**	< 0.010	**0.68**	<0.10	<0.0050	<1.0	<0.0050	<0.0050	**0.006**	<0.0050	<0.0050
trans-1,2-Dichloroethene	mg/kg	*69*	*230*	<0.010	<0.010	<0.010	**0.0059**	<0.10	<0.0050	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	**0.0039 J**
Vinyl Chloride	mg/kg	*0.079*	*0.75*	<0.010	<0.010	<0.010	**0.021**	<0.10	<0.0050	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
1,1,1-Trichloroethane	mg/kg	*1,200*	*1,200*	<0.010	<0.010	<0.010	<0.0050	<0.10	<0.0050	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
1,1-Dichloroethane	mg/kg	*510*	*1,700*	< 0.010	< 0.010	< 0.010	**0.0031 J**	<0.10	<0.0050	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
1,2-Dichloroethane	mg/kg	*0.28*	*0.6*	<0.010	<0.010	<0.010	<0.0050	<0.10	<0.0050	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Total CVOCs	mg/kg			***0.035***	***0.061***	0	***1.2***	***0.52***	***0.0052***	0	***0.0052***	0	***0.0086***	***0.0023***	***0.0039***
Other Volatile Organic Compounds															
Acetone	mg/kg	*1,600*	*6,000*	<0.050	<0.050	<0.050	<0.25	<5.0	**0.11 J**	<50	**0.11 J**	**0.20 J**	**0.10 J**	<0.25	**0.092 J**
Chloroform	mg/kg	*3.6*	*12*	<0.010	<0.010	<0.010	**0.0026 J**	<0.50	<0.025	<5.0	<0.025	**0.0027 J**	**0.0028 J**	**0.0022 J**	**0.0025 J**
2-Butanone (MEK)	mg/kg	*730*	*2,700*	<0.050	<0.050	<0.050	<0.050	**1.4**	<0.050	**3.1 J**	<0.050	**0.023 J**	<0.050	<0.050	<0.050
Methylene Chloride	mg/kg	*9.1*	*21*	< 0.010	< 0.010	< 0.010	<0.025	<0.50	<0.025	<5.0	<0.025	<0.025	<0.025	<0.025	<0.025
1,1,2-Trichloro-1,2,2-trifluoroethane	mg/kg	*5,600*	*5,600*	---	---	---	<0.0050	<0.10	<0.0050	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
n-Butylbenzene	mg/kg	*240*	*240*	<0.010	<0.010	<0.010	<0.0050	<0.10	<0.0050	<1.0	<0.0050	**0.0021 J**	<0.0050	<0.0050	<0.0050
sec-Butylbenzene	mg/kg	*220*	*220*	<0.010	<0.010	<0.010	<0.0050	<0.10	<0.0050	<1.0	<0.0050	**0.0016 J**	<0.0050	<0.0050	**0.053**
Ethylbenzene	mg/kg	*8.9*	*20*	<0.010	<0.010	<0.010	<0.0050	<0.10	<0.0050	**1.2**	<0.0050	<0.0050	<0.0050	<0.0050	**0.0017 J**
Isopropylbenzene	mg/kg	*160*	*520*	<0.010	<0.010	<0.010	<0.0050	<0.10	<0.0050	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	**0.011**
p-Isopropyltoluene	mg/kg	---	---	---	---	---	<0.0050	<0.10	<0.0050	**3.8**	<0.0050	<0.0050	<0.0050	<0.0050	**0.038**
Naphthalene	mg/kg	*56*	*190*	<0.010	<0.010	<0.010	<0.025	<0.50	<0.025	**30**	**0.0026 J**	**0.0026 J**	<0.025	<0.025	**0.058**
n-Propylbenzene	mg/kg	*240*	*240*	<0.010	<0.010	<0.010	<0.0050	<0.10	<0.0050	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	**0.016**
1,2,3-Trichlorobenzene	mg/kg	---	---	< 0.010	< 0.010	< 0.010	<0.0050	<0.10	<0.0050	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.005
1,2,4-Trimethylbenzene	mg/kg	*52*	*170*	<0.010	<0.010	<0.010	<0.0050	<0.10	<0.0050	**23**	**0.0011 J**	<0.0050	<0.0050	<0.0050	**0.078**
1,2,3-Trimethylbenzene	mg/kg	---	---	---	---	---	<0.0050	<0.10	<0.0050	**11**	<0.0050	<0.0050	<0.0050	<0.0050	**0.046**
1,3,5-Trimethylbenzene	mg/kg	*21*	*70*	<0.010	<0.010	<0.010	<0.0050	<0.10	<0.0050	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	**0.078**
Xylenes, Total	mg/kg	*270*	*420*	<0.010	<0.010	<0.010	**0.0032 J**	<0.30 J3	<0.015	**11**	<0.015	**0.0058 J**	<0.015	<0.015	**0.013 J**
Total Petroleum Hydrocarbon															
TPH - Oil & Grease	mg/kg	*100*	*250*	< 150	< 150	< 150	**160**	---	**390**	**1,600**	**4,500**	**220**	**290**	**120**	**190**
Semivolatile Organic Compounds															
Di-n-butyl phthalate	mg/kg	---	---	**3.4**	< 0.3	< 0.3	---	---	---	---	---	---	---	---	---
Bis (2-ethyl hexyl) phthalate	mg/kg	*35*	*120*	**38.0**	< 0.3	< 0.3	---	---	---	---	---	---	---	---	---
Di-n-octyl phthalate	mg/kg	*2,400*	*25,000*	**11.3**	< 0.3	< 0.3	---	---	---	---	---	---	---	---	---
Metals															
Arsenic	mg/kg	*0.39*	*1.6*	**1.99**	**0.56**	**1.89**	---	---	---	---	---	---	---	---	---
Barium	mg/kg	*5,400*	*67,000*	**117**	**108**	**27.1**	---	---	---	---	---	---	---	---	---
Cadmium	mg/kg	*37*	*450*	< 0.1	< 0.1	**0.22**	---	---	---	---	---	---	---	---	---
Chromium	mg/kg	*210*	*450*	**13.6**	**22.4**	**2.66**	---	---	---	---	---	---	---	---	---
Lead	mg/kg	*400*	*800*	**17.4**	**21.9**	**2.97**	---	---	---	---	---	---	---	---	---
Mercury	mg/kg	*23*	*310*	< 0.5	< 0.5	< 0.5	---	---	---	---	---	---	---	---	---
Selenium	mg/kg	*390*	*5,100*	< 0.5	**1.02**	< 0.5	---	---	---	---	---	---	---	---	---
Silver	mg/kg	*390*	*5,100*	< 0.1	< 0.1	< 0.1	---	---	---	---	---	---	---	---	---
Nickel	mg/kg	*1,600*	*20,000*	**10.7**	**35.7**	**7.85**	---	---	---	---	---	---	---	---	---

Table 6
Summary of Soil Analytical Results, 2004-2008
RBTC LDB #1, Leitchfield, Kentucky
MACTEC Project No. 6680-04-9537

			Field Sample ID	GP-9	GP-10	GP-11	GP-12	GP-13	GP-14	GP-15	GP-16	GP-17	GP-18	GP-19	GP-23
			Depth	0-2	0-2	0-2	0-2	0-2	0-2	0-2	0-2	0-2	0-2	3-5	7-8
			Sample Collection Date	03/12/07	03/12/07	03/13/07	03/13/07	03/13/07	03/13/07	03/13/07	03/13/07	03/13/07	03/13/07	05/13/08	05/13/08
	Units	***Res. PRG***	***Ind. PRG***												
Chlorinated Volatile Organic Compounds															
Tetrachloroethene	mg/kg	*1.5*	*3.4*	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	**0.0026 J**	<0.0050
Trichloroethene	mg/kg	*0.053*	*0.11*	<0.0050	**0.0026 J**	**0.0057**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	**0.0080**	**0.61**	**0.033**
1,1-Dichloroethene	mg/kg	*120*	*410*	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
cis-1,2-Dichloroethene	mg/kg	*43*	*150*	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	**0.064**	**0.0066**	**0.19**	<0.0050
trans-1,2-Dichloroethene	mg/kg	*69*	*230*	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Vinyl Chloride	mg/kg	*0.079*	*0.75*	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
1,1,1-Trichloroethane	mg/kg	*1,200*	*1,200*	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
1,1-Dichloroethane	mg/kg	*510*	*1,700*	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
1,2-Dichloroethane	mg/kg	*0.28*	*0.6*	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Total CVOCs	mg/kg			0	***0.0026***	***0.0057***	0	0	0	0	0	***0.064***	***0.015***	***0.80***	***0.033***
Other Volatile Organic Compounds															
Acetone	mg/kg	*1,600*	*6,000*	**0.13 J**	**0.49**	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Chloroform	mg/kg	*3.6*	*12*	**0.0028 J**	**0.0028 J**	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
2-Butanone (MEK)	mg/kg	*730*	*2,700*	**0.023 J**	**0.019 J**	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Methylene Chloride	mg/kg	*9.1*	*21*	<0.025	<0.025	<0.025	**0.0035 J**	**0.0031 J**	<0.025	**0.0031 J**	<0.025	<0.025	**0.0033 J**	<0.025	<0.025
1,1,2-Trichloro-1,2,2-trifluoroethane	mg/kg	*5,600*	*5,600*	<0.0050	<0.005	**0.0086**	**0.010**	**0.010**	**0.010**	**0.011**	**0.011**	**0.010**	**0.0099**	<0.0050	<0.0050
n-Butylbenzene	mg/kg	*240*	*240*	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
sec-Butylbenzene	mg/kg	*220*	*220*	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Ethylbenzene	mg/kg	*8.9*	*20*	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Isopropylbenzene	mg/kg	*160*	*520*	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
p-Isopropyltoluene	mg/kg	---	---	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Naphthalene	mg/kg	*56*	*190*	**0.0026 J**	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
n-Propylbenzene	mg/kg	*240*	*240*	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
1,2,3-Trichlorobenzene	mg/kg	---	---	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
1,2,4-Trimethylbenzene	mg/kg	*52*	*170*	<0.0011 J	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
1,2,3-Trimethylbenzene	mg/kg	---	---	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
1,3,5-Trimethylbenzene	mg/kg	*21*	*70*	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Xylenes, Total	mg/kg	*270*	*420*	**0.0028 J**	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
Total Petroleum Hydrocarbon															
TPH - Oil & Grease	mg/kg	*100*	*250*	**220**	**140**	---	---	---	---	---	---	---	---	--	--
Semivolatile Organic Compounds															
Di-n-butyl phthalate	mg/kg	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Bis (2-ethyl hexyl) phthalate	mg/kg	*35*	*120*	---	---	---	---	---	---	---	---	---	---	---	---
Di-n-octyl phthalate	mg/kg	*2,400*	*25,000*	---	---	---	---	---	---	---	---	---	---	---	---
Metals															
Arsenic	mg/kg	*0.39*	*1.6*	---	---	---	---	---	---	---	---	---	---	---	---
Barium	mg/kg	*5,400*	*67,000*	---	---	---	---	---	---	---	---	---	---	---	---
Cadmium	mg/kg	*37*	*450*	---	---	---	---	---	---	---	---	---	---	---	---
Chromium	mg/kg	*210*	*450*	---	---	---	---	---	---	---	---	---	---	---	---
Lead	mg/kg	*400*	*800*	---	---	---	---	---	---	---	---	---	---	---	---
Mercury	mg/kg	*23*	*310*	---	---	---	---	---	---	---	---	---	---	---	---
Selenium	mg/kg	*390*	*5,100*	---	---	---	---	---	---	---	---	---	---	---	---
Silver	mg/kg	*390*	*5,100*	---	---	---	---	---	---	---	---	---	---	---	---
Nickel	mg/kg	*1,600*	*20,000*	---	---	---	---	---	---	---	---	---	---	---	---

Table 6
Summary of Soil Analytical Results, 2004-2008
RBTC LDB #1, Leitchfield, Kentucky
MACTEC Project No. 6680-04-9537

			Field Sample ID	GP-26	GP-27	GP-28	GP-29	GP-31	GP-32	GP-33	GP-35	GP-35	GP-36	GP-37
			Depth	7.5-10	12.5-15	5-7.5	5-7.5	10-12.5	5-7.5	7.5-10	2-3	7-8	5-7	10-12
			Sample Collection Date	05/13/08	05/13/08	05/14/08	05/14/08	05/14/08	05/14/08	05/14/08	05/14/08	05/14/08	05/14/08	05/14/08
	Units	***Res. PRG***	***Ind. PRG***											
Chlorinated Volatile Organic Compounds														
Tetrachloroethene	mg/kg	*1.5*	*3.4*	**0.46 J**	<0.0050	<0.050	<0.0050	<0.0050	--	<0.0050	--	<0.0050	--	**0.0095**
Trichloroethene	mg/kg	*0.053*	*0.11*	**110**	**0.14**	**2.2**	**0.072**	**0.13**	--	**0.0054**	--	**0.0019 J**	--	**2.5**
1,1-Dichloroethene	mg/kg	*120*	*410*	<1.0	<0.0050	<0.050	<0.0050	<0.0050	--	<0.0050	--	<0.0050	--	**0.0076**
cis-1,2-Dichloroethene	mg/kg	*43*	*150*	<1.0	**0.32**	**0.60**	**0.0038 J**	**0.33**	--	<0.0050	--	<0.0050	--	**0.60**
trans-1,2-Dichloroethene	mg/kg	*69*	*230*	<1.0	<0.0050	<0.050	<0.0050	<0.0050	--	<0.0050	--	<0.0050	--	<0.0050
Vinyl Chloride	mg/kg	*0.079*	*0.75*	<1.0	<0.0050	<0.050	<0.0050	**0.015**	--	<0.0050	--	<0.0050	--	**0.026**
1,1,1-Trichloroethane	mg/kg	*1,200*	*1,200*	<1.0	<0.0050	<0.050	<0.0050	<0.0050	--	<0.0050	--	<0.0050	--	<0.0050
1,1-Dichloroethane	mg/kg	*510*	*1,700*	<1.0	<0.0050	<0.050	<0.0050	<0.0050	--	<0.0050	--	<0.0050	--	**0.0076**
1,2-Dichloroethane	mg/kg	*0.28*	*0.6*	<1.0	<0.0050	<0.050	<0.0050	<0.0050	--	<0.0050	--	<0.0050	--	<0.0050
Total CVOCs	mg/kg			***110***	***0.46***	***2.8***	***0.076***	***0.48***	--	***0.0054***	--	***0.0019***	--	***3.2***
Other Volatile Organic Compounds														
Acetone	mg/kg	*1,600*	*6,000*	<50	<0.25	<2.5	<0.25	<0.25	--	<0.25	--	<0.25	--	<0.25
Chloroform	mg/kg	*3.6*	*12*	<5.0	<0.025	<0.25	<0.025	<0.025	--	<0.025	--	<0.025	--	<0.025
2-Butanone (MEK)	mg/kg	*730*	*2,700*	<10	<0.050	**1.2**	<0.050	<0.050	--	<0.050	--	<0.050	--	<0.050
Methylene Chloride	mg/kg	*9.1*	*21*	<5.0	<0.025	<0.25	<0.025	<0.025	--	<0.025	--	<0.025	--	<0.025
1,1,2-Trichloro-1,2,2-trifluoroethane	mg/kg	*5,600*	*5,600*	<1.0	<0.0050	<0.050	<0.0050	<0.0050	--	<0.0050	--	<0.0050	--	<0.0050
n-Butylbenzene	mg/kg	*240*	*240*	<1.0	<0.0050	<0.050	<0.0050	<0.0050	--	<0.0050	--	<0.0050	--	<0.0050
sec-Butylbenzene	mg/kg	*220*	*220*	<1.0	<0.0050	<0.050	<0.0050	<0.0050	--	<0.0050	--	<0.0050	--	<0.0050
Ethylbenzene	mg/kg	*8.9*	*20*	<1.0	<0.0050	<0.050	<0.0050	<0.0050	--	<0.0050	--	<0.0050	--	<0.0050
Isopropylbenzene	mg/kg	*160*	*520*	<1.0	<0.0050	<0.050	<0.0050	<0.0050	--	<0.0050	--	<0.0050	--	<0.0050
p-Isopropyltoluene	mg/kg	---	---	<1.0	<0.0050	<0.050	<0.0050	<0.0050	--	<0.0050	--	<0.0050	--	<0.0050
Naphthalene	mg/kg	*56*	*190*	<5.0	<0.025	<0.25	<0.025	<0.025	--	<0.025	--	<0.025	--	<0.025
n-Propylbenzene	mg/kg	*240*	*240*	<1.0	<0.0050	<0.050	<0.0050	<0.0050	--	<0.0050	--	<0.0050	--	<0.0050
1,2,3-Trichlorobenzene	mg/kg	---	---	<1.0	<0.0050	<0.050	<0.0050	<0.0050	--	<0.0050	--	<0.0050	--	<0.0050
1,2,4-Trimethylbenzene	mg/kg	*52*	*170*	<1.0	<0.0050	<0.050	<0.0050	<0.0050	--	<0.0050	--	<0.0050	--	<0.0050
1,2,3-Trimethylbenzene	mg/kg	---	---	<1.0	<0.0050	<0.050	<0.0050	<0.0050	--	<0.0050	--	<0.0050	--	<0.0050
1,3,5-Trimethylbenzene	mg/kg	*21*	*70*	<1.0	<0.0050	<0.050	<0.0050	<0.0050	--	<0.0050	--	<0.0050	--	<0.0050
Xylenes, Total	mg/kg	*270*	*420*	<3.0	<0.015	<0.15	<0.015	<0.015	--	<0.015	--	<0.015	--	<0.015
Total Petroleum Hydrocarbon														
TPH - Oil & Grease	mg/kg	*100*	*250*	--	--	--	<100	--	<100	--	<100	--	**140**	--
Semivolatile Organic Compounds														
Di-n-butyl phthalate	mg/kg	---	---	---	---	---	<0.027	---	---	---	---	---	---	---
Bis (2-ethyl hexyl) phthalate	mg/kg	*35*	*120*	---	---	---	<0.060	---	---	---	---	---	---	---
Di-n-octyl phthalate	mg/kg	*2,400*	*25,000*	---	---	---	<0.036	---	---	---	---	---	---	---
Metals														
Arsenic	mg/kg	*0.39*	*1.6*	---	---	---	---	---	---	---	---	---	---	---
Barium	mg/kg	*5,400*	*67,000*	---	---	---	---	---	---	---	---	---	---	---
Cadmium	mg/kg	*37*	*450*	---	---	---	---	---	---	---	---	---	---	---
Chromium	mg/kg	*210*	*450*	---	---	---	---	---	---	---	---	---	---	---
Lead	mg/kg	*400*	*800*	---	---	---	---	---	---	---	---	---	---	---
Mercury	mg/kg	*23*	*310*	---	---	---	---	---	---	---	---	---	---	---
Selenium	mg/kg	*390*	*5,100*	---	---	---	---	---	---	---	---	---	---	---
Silver	mg/kg	*390*	*5,100*	---	---	---	---	---	---	---	---	---	---	---
Nickel	mg/kg	*1,600*	*20,000*	---	---	---	---	---	---	---	---	---	---	---

Table 6
Summary of Soil Analytical Results, 2004-2008
RBTC LDB #1, Leitchfield, Kentucky
MACTEC Project No. 6680-04-9537

			Field Sample ID	GP-39	GP-40	GP-42	GP-44	GP-44	GP-45	GP-47	GP-48	GP-50	GP-51	GP-52
			Depth	12-14	10-12	7.5-10	3-5	7.5-10	7-8.5	7-9.5	5-6.5	5-10	5-7.5	5-7
			Sample Collection Date	05/15/08	05/15/08	05/15/08	05/15/08	05/15/08	05/15/08	05/16/08	05/16/08	05/16/08	05/16/08	05/19/08
	Units	***Res. PRG***	***Ind. PRG***											
Chlorinated Volatile Organic Compounds														
Tetrachloroethene	mg/kg	*1.5*	*3.4*	**0.0052**	**0.0022 J**	<0.0050	--	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	--	--
Trichloroethene	mg/kg	*0.053*	*0.11*	**0.54**	**0.027**	<0.0050	--	**0.23**	<0.0050	<0.0050	<0.0050	**0.0029 J**	--	--
1,1-Dichloroethene	mg/kg	*120*	*410*	<0.0050	<0.0050	<0.0050	--	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	--	--
cis-1,2-Dichloroethene	mg/kg	*43*	*150*	**0.087**	**0.0037 J**	<0.0050	--	**0.076**	<0.0050	<0.0050	<0.0050	**0.014**	--	--
trans-1,2-Dichloroethene	mg/kg	*69*	*230*	<0.0050	<0.0050	<0.0050	--	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	--	--
Vinyl Chloride	mg/kg	*0.079*	*0.75*	<0.0050	<0.0050	<0.0050	--	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	--	--
1,1,1-Trichloroethane	mg/kg	*1,200*	*1,200*	<0.0050	<0.0050	<0.0050	--	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	--	--
1,1-Dichloroethane	mg/kg	*510*	*1,700*	<0.0050	<0.0050	<0.0050	--	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	--	--
1,2-Dichloroethane	mg/kg	*0.28*	*0.6*	<0.0050	<0.0050	<0.0050	--	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	--	--
Total CVOCs	mg/kg			***0.63***	***0.033***	***0***	--	***0.31***	***0***	***0***	***0***	***0.017***		
Other Volatile Organic Compounds														
Acetone	mg/kg	*1,600*	*6,000*	<0.25	**0.087 J**	<0.25	--	<2.5	<0.25	<0.25	<0.25	<0.25	--	--
Chloroform	mg/kg	*3.6*	*12*	<0.025	<0.025	<0.025	--	<0.25	<0.025	<0.025	<0.025	<0.025	--	--
2-Butanone (MEK)	mg/kg	*730*	*2,700*	<0.050	<0.050	<0.050	--	<0.50	<0.050	<0.050	<0.050	<0.050	--	--
Methylene Chloride	mg/kg	*9.1*	*21*	<0.025	<0.025	<0.025	--	<0.25	<0.025	<0.025	<0.025	<0.025	--	--
1,1,2-Trichloro-1,2,2-trifluoroethane	mg/kg	*5,600*	*5,600*	<0.0050	<0.0050	<0.0050	--	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	--	--
n-Butylbenzene	mg/kg	*240*	*240*	<0.0050 B3	<0.0050 B3	<0.0050 B3	--	<0.0050 B3	<0.0050	<0.0050	<0.0050	<0.0050 B3	--	--
sec-Butylbenzene	mg/kg	*220*	*220*	<0.0050 B3	<0.0050	<0.0050 B3	--	<0.0050 B3	<0.0050	<0.0050	<0.0050	<0.0050 B3	--	--
Ethylbenzene	mg/kg	*8.9*	*20*	<0.0050	**0.0013 J**	<0.0050	--	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	--	--
Isopropylbenzene	mg/kg	*160*	*520*	<0.0050	<0.0050	<0.0050	--	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	--	--
p-Isopropyltoluene	mg/kg	---	---	<0.0050	<0.0050	<0.0050	--	**0.044 J**	<0.0050	<0.0050	<0.0050	<0.0050	--	--
Naphthalene	mg/kg	*56*	*190*	<0.025	<0.025	<0.025	--	**0.32**	<0.025	<0.025	<0.025	<0.025	--	--
n-Propylbenzene	mg/kg	*240*	*240*	<0.0050	<0.0050	<0.0050	--	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	--	--
1,2,3-Trichlorobenzene	mg/kg	---	---	<0.0050	<0.0050	<0.0050	--	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	--	--
1,2,4-Trimethylbenzene	mg/kg	*52*	*170*	<0.0050 B3	<0.0050 B3	<0.0050 B3	--	**0.33 B**	<0.0050	<0.0050	<0.0050	<0.0050 B3	--	--
1,2,3-Trimethylbenzene	mg/kg	---	---	<0.0050	<0.0050	<0.0050	--	**0.16**	<0.0050	<0.0050	<0.0050	<0.0050	--	--
1,3,5-Trimethylbenzene	mg/kg	*21*	*70*	<0.0050	<0.0050	<0.0050	--	**0.064**	<0.0050	<0.0050	<0.0050	<0.0050	--	--
Xylenes, Total	mg/kg	*270*	*420*	<0.015	<0.015	<0.015	--	**0.039 J**	<0.015	<0.015	<0.015	<0.015	--	--
Total Petroleum Hydrocarbon														
TPH - Oil & Grease	mg/kg	*100*	*250*	--	--	<100	**200**	--	--	--	--	--	**380**	**130**
Semivolatile Organic Compounds														
Di-n-butyl phthalate	mg/kg	---	---	---	---	---	---	---	---	---	---	---	---	---
Bis (2-ethyl hexyl) phthalate	mg/kg	*35*	*120*	---	---	---	---	---	---	---	---	---	---	---
Di-n-octyl phthalate	mg/kg	*2,400*	*25,000*	---	---	---	---	---	---	---	---	---	---	---
Metals														
Arsenic	mg/kg	*0.39*	*1.6*	---	---	---	---	---	---	---	---	---	---	---
Barium	mg/kg	*5,400*	*67,000*	---	---	---	---	---	---	---	---	---	---	---
Cadmium	mg/kg	*37*	*450*	---	---	---	---	---	---	---	---	---	---	---
Chromium	mg/kg	*210*	*450*	---	---	---	---	---	---	---	---	---	---	---
Lead	mg/kg	*400*	*800*	---	---	---	---	---	---	---	---	---	---	---
Mercury	mg/kg	*23*	*310*	---	---	---	---	---	---	---	---	---	---	---
Selenium	mg/kg	*390*	*5,100*	---	---	---	---	---	---	---	---	---	---	---
Silver	mg/kg	*390*	*5,100*	---	---	---	---	---	---	---	---	---	---	---
Nickel	mg/kg	*1,600*	*20,000*	---	---	---	---	---	---	---	---	---	---	---

Table 6
Summary of Soil Analytical Results, 2004-2008
RBTC LDB #1, Leitchfield, Kentucky
MACTEC Project No. 6680-04-9537

			Field Sample ID	GP-53	GP-53	GP-54	GP-56	GP-59	GP-64	GP-73	GP-74	GP-76
			Depth	5-7.5	7.5-10	5-7.5	2.5-5	2.5-5	2.5-5	2.5-5	2.5-5	2.5-5
			Sample Collection Date	05/16/08	05/16/08	05/16/08	05/19/08	05/19/08	05/20/08	05/20/08	05/20/08	05/20/08
	Units	***Res. PRG***	***Ind. PRG***									
Chlorinated Volatile Organic Compounds												
Tetrachloroethene	mg/kg	*1.5*	*3.4*	--	**0.0031 J**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--
Trichloroethene	mg/kg	*0.053*	*0.11*	--	**0.91**	**0.042**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--
1,1-Dichloroethene	mg/kg	*120*	*410*	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--
cis-1,2-Dichloroethene	mg/kg	*43*	*150*	--	**0.42**	**0.0098**	<0.0050	<0.0050	<0.0050	**0.12**	**0.015**	--
trans-1,2-Dichloroethene	mg/kg	*69*	*230*	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--
Vinyl Chloride	mg/kg	*0.079*	*0.75*	--	**0.0015 J**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--
1,1,1-Trichloroethane	mg/kg	*1,200*	*1,200*	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--
1,1-Dichloroethane	mg/kg	*510*	*1,700*	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--
1,2-Dichloroethane	mg/kg	*0.28*	*0.6*	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--
Total CVOCs	mg/kg				***1.3***	***0.052***	***0***	***0***	***0***	***0.12***	***0.015***	
Other Volatile Organic Compounds												
Acetone	mg/kg	*1,600*	*6,000*	--	<0.25	<0.25	<0.25	<0.25	**0.38**	**0.13 J**	**0.1 J**	--
Chloroform	mg/kg	*3.6*	*12*	--	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	--
2-Butanone (MEK)	mg/kg	*730*	*2,700*	--	<0.050	<0.050	<0.050	<0.050	<0.0050	<0.0050	<0.0050	--
Methylene Chloride	mg/kg	*9.1*	*21*	--	<0.025	<0.025	**0.0062 J**	**0.005 J**	<0.025	<0.025	<0.025	--
1,1,2-Trichloro-1,2,2-trifluoroethane	mg/kg	*5,600*	*5,600*	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--
n-Butylbenzene	mg/kg	*240*	*240*	--	<0.0050 B3	<0.0050 B3	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--
sec-Butylbenzene	mg/kg	*220*	*220*	--	<0.0050 B3	<0.0050 B3	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--
Ethylbenzene	mg/kg	*8.9*	*20*	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--
Isopropylbenzene	mg/kg	*160*	*520*	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--
p-Isopropyltoluene	mg/kg	---	---	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--
Naphthalene	mg/kg	*56*	*190*	--	**0.0047 J**	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	--
n-Propylbenzene	mg/kg	*240*	*240*	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--
1,2,3-Trichlorobenzene	mg/kg	---	---	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--
1,2,4-Trimethylbenzene	mg/kg	*52*	*170*	--	<0.0050 B3	<0.0050 B3	<0.0050	<0.0050	**0.0010**	<0.0050	<0.0050	--
1,2,3-Trimethylbenzene	mg/kg	---	---	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--
1,3,5-Trimethylbenzene	mg/kg	*21*	*70*	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--
Xylenes, Total	mg/kg	*270*	*420*	--	**0.0029 J**	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	--
Total Petroleum Hydrocarbon												
TPH - Oil & Grease	mg/kg	*100*	*250*	**330**	--	--	--	--	--	--	--	**120**
Semivolatile Organic Compounds												
Di-n-butyl phthalate	mg/kg	---	---	---	---	---	---	---	---	---	---	---
Bis (2-ethyl hexyl) phthalate	mg/kg	*35*	*120*	---	---	---	---	---	---	---	---	---
Di-n-octyl phthalate	mg/kg	*2,400*	*25,000*	---	---	---	---	---	---	---	---	---
Metals												
Arsenic	mg/kg	*0.39*	*1.6*	---	---	---	---	---	---	---	---	---
Barium	mg/kg	*5,400*	*67,000*	---	---	---	---	---	---	---	---	---
Cadmium	mg/kg	*37*	*450*	---	---	---	---	---	---	---	---	---
Chromium	mg/kg	*210*	*450*	---	---	---	---	---	---	---	---	---
Lead	mg/kg	*400*	*800*	---	---	---	---	---	---	---	---	---
Mercury	mg/kg	*23*	*310*	---	---	---	---	---	---	---	---	---
Selenium	mg/kg	*390*	*5,100*	---	---	---	---	---	---	---	---	---
Silver	mg/kg	*390*	*5,100*	---	---	---	---	---	---	---	---	---
Nickel	mg/kg	*1,600*	*20,000*	---	---	---	---	---	---	---	---	---

Table 6
Summary of Soil Analytical Results, 2004-2008
RBTC LDB #1, Leitchfield, Kentucky
MACTEC Project No. 6680-04-9537

Prepared by: ALD 7/2/08
Checked by: SMD 7/31/08

Notes:

mg/kg Milligrams per kilogram
Sample depth in feet below ground surface
--- Not analyzed, not established, or not available
PRG USEPA Region 9 Preliminary Remediation Goal for soil
Res. = residential, Ind. = industrial
Levels shown for TPH are risk-based guidance from KDEP 7097C
Detected values are indicated in **bold**
Values that exceed Residential PRGs are shaded.
"*Total CVOCs*" is calculated as the sum of the CVOC values, non-detects are counted as zero
Laboratory Qualifiers:
B3 (ESC) - The indicated compound was found in the associated method blank, but all reported samples were non-detect.
J (EPA) - Estimated value below the lowest calibration point. Confidence correlates with concentration.
J3 The associated batch QC was outside the established quality control range for precision.
J4 The associated batch QC was outside the established quality control range for accuracy.

Table 7
Summary of Water Analytical Results, 2004-2008 - Surface Water, Seeps, and Temporary Wells
RBTC LDB #1, Leitchfield, Kentucky
MACTEC Project No. 6680-04-9537

Field Sample ID				SW-1	SW-2	HF-1	TW-1	TW-2	TW-3	TW-4	SEEP	GP-19	GP-20
Sample Collection Date				11/23/04	11/23/04	11/18/04	11/23/04	11/23/04	11/23/04	11/23/04	04/18/07	05/16/08	05/16/08
	Units	*PRG*	*MCL*										
Chlorinated Volatile Organic Compounds													
Tetrachloroethene	mg/L	*0.00066*	*0.0050*	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0010	<0.025	**0.0022**
Trichloroethene	mg/L	*0.000028*	*0.0050*	<0.005	<0.005	<0.005	**0.449**	<0.005	<0.005	<0.005	<0.0010	**17**	**1.1**
1,1-Dichloroethene	mg/L	*0.34*	*0.0070*	<0.005	<0.005	<0.005	**0.062**	<0.005	<0.005	<0.005	<0.0010	**0.15**	**0.013**
cis-1,2-Dichloroethene	mg/L	*0.061*	*0.070*	<0.005	<0.005	**2.15**	**0.400**	<0.005	**0.010**	**0.036**	**0.029**	**12**	**0.85**
trans-1,2-Dichloroethene	mg/L	*0.12*	*0.10*	<0.005	<0.005	**0.023**	<0.005	<0.005	<0.005	<0.005	<0.0010	**0.053**	**0.018**
Vinyl Chloride	mg/L	*0.00002*	*0.0020*	<0.005	<0.005	**3.4**	**0.160**	<0.005	<0.005	<0.005	<0.0010	**0.94**	**0.029**
1,1,1-Trichloroethane	mg/L	*3.2*	*0.20*	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0010	<0.025	<0.0010
1,1,2-Trichloroethane	mg/L	*0.0050*	*0.00020*	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0010	<0.025	<0.0010
1,1-Dichloroethane	mg/L	*0.81*	--	<0.005	<0.005	**0.008**	**0.044**	<0.005	<0.005	<0.005	<0.0010	**0.079**	**0.0062**
1,2-Dichloroethane	mg/L	*0.00012*	*0.005*	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0010	<0.025	**0.00053 J**
Carbon Tetrachloride	mg/L	*0.00017*	*0.0050*	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.0010	<0.025	<0.0010
Total CVOCs	mg/L			***0***	***0***	***5.6***	***1.1***	***0***	***0.010***	***0.036***	***0.029***	***30***	***2.02***
Other Volatile Organic Compounds													
Acetone	mg/L	*0.61*	--	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	**0.029**	<1.3	**0.023 J**
Chloroform	mg/L	*0.0062*	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0050	**0.011 J**	**0.00057 J**
2-Butanone (MEK)	mg/L	*1.9*	--	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.010	<0.25	**0.0065 J**
Methylene Chloride	mg/L	*0.0043*	*0.0050*	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0050	<0.13	**0.00035 J**
4-Methyl-2-pentanone (MIBK)	mg/L	*0.16*	--	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.010	<0.010	<0.010
Benzene	mg/L	*0.00034*	*0.0050*	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0010	<0.025	<0.0010
n-Butylbenzene	mg/L	*0.24*	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0010	<0.0010	<0.0010
Ethylbenzene	mg/L	*0.0029*	*0.70*	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0010	<0.0010	<0.0010
Isopropylbenzene	mg/L	*0.66*	--	---	---	---	---	---	---	---	<0.0010	<0.0010	<0.0010
Naphthalene	mg/L	*0.0062*	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0050	<0.13	<0.0050
Toluene	mg/L	*0.72*	*1.0*	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0050	<0.13	**0.00068 J**
1,2,4-Trimethylbenzene	mg/L	*0.012*	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0010	<0.025	<0.0010
1,2,3-Trimethylbenzene	mg/L	--	--	---	---	---	---	---	---	---	<0.0010	<0.025	<0.0010
1,3,5-Trimethylbenzene	mg/L	*0.012*	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0010	<0.025	<0.0010
Xylenes, Total	mg/L	*0.21*	*10*	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.0030	<0.0030	<0.0030
Total Petroleum Hydrocarbon													
TPH - Oil & Grease	mg/L	---	---	<5	<5	**8.0**	<5	<5	<5	<5	---	---	---
Metals													
Arsenic	mg/L	*0.000045*	*0.010*	<0.02	<0.02	<0.02	**0.030**	<0.02	<0.02	<0.02	---	---	---
Barium	mg/L	*2.6*	*2.0*	**0.13**	**0.12**	**0.60**	**3.0**	**0.09**	**0.23**	**0.030**	---	---	---
Cadmium	mg/L	*0.018*	*0.005*	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	---	---	---
Chromium	mg/L	*0.11*	*0.10*	<0.01	<0.01	**0.01**	**0.25**	<0.01	<0.01	<0.01	---	---	---
Lead	mg/L	--	*0.015*	<0.01	<0.01	<0.01	**0.17**	<0.01	<0.01	<0.01	---	---	---
Mercury	mg/L	*0.011*	*0.002*	<0.0002	<0.0002	<0.0002	**0.00066**	<0.0002	<0.0002	<0.0002	---	---	---
Nickel	mg/L	*0.73*	---	<0.01	<0.01	**0.09**	**0.63**	**0.01**	**0.02**	<0.01	---	---	---
Selenium	mg/L	*0.18*	*0.05*	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	---	---	---

Table 7
Summary of Water Analytical Results, 2004-2008 - Surface Water, Seeps, and Temporary Wells
RBTC LDB #1, Leitchfield, Kentucky
MACTEC Project No. 6680-04-9537

			Field Sample ID	GP-22	GP-24	GP-26	GP-27	GP-28	GP-29	GP-33	GP-34	GP-39	GP-40
			Sample Collection Date	05/19/08	05/15/08	05/15/08	05/15/08	05/16/08	05/15/08	05/16/08	05/16/08	05/16/08	05/15/08
	Units	***PRG***	***MCL***										
Chlorinated Volatile Organic Compounds													
Tetrachloroethene	mg/L	*0.00066*	*0.0050*	<0.0010	<0.0010	<0.50	<1.0	<0.50	**0.027**	<0.10	<0.0010	<0.050	<0.050
Trichloroethene	mg/L	*0.000028*	*0.0050*	**0.13**	**0.0077**	**400**	**38**	**33**	**1.1**	**50**	**0.00066 J**	**36**	**27**
1,1-Dichloroethene	mg/L	*0.34*	*0.0070*	**0.054**	**0.021**	<0.50	**1.8**	<0.50	**0.010**	**0.10**	<0.0010	**0.21**	<0.050
cis-1,2-Dichloroethene	mg/L	*0.061*	*0.070*	**0.47**	**0.015**	**21**	**100**	**14**	**0.075**	**43**	<0.0010	**8.7**	**3.6**
trans-1,2-Dichloroethene	mg/L	*0.12*	*0.10*	**0.052**	**0.00041 J**	<0.50	**0.31 J**	<0.50	<0.010	**0.19**	<0.0010	**0.058**	**0.037 J**
Vinyl Chloride	mg/L	*0.00002*	*0.0020*	**0.013**	**0.00064 J**	**0.48 J**	**2.2**	**1.6**	<0.010	<0.10	<0.0010	**0.24**	**0.023 J**
1,1,1-Trichloroethane	mg/L	*3.2*	*0.20*	<0.0010	<0.0010	<0.50	**0.36 J**	<0.50	<0.010	<0.10	<0.0010	<0.050	<0.050
1,1,2-Trichloroethane	mg/L	*0.0050*	*0.00020*	<0.0010	<0.0010	<0.50	<1.0	<0.50	<0.010	<0.10	<0.0010	<0.050	<0.050
1,1-Dichloroethane	mg/L	*0.81*	--	**0.015**	**0.0095**	<0.50	**1.6**	<0.50	**0.0036 J**	<0.10	<0.0010	**0.055**	<0.050
1,2-Dichloroethane	mg/L	*0.00012*	*0.005*	**0.00097 J**	**0.00043 J**	<0.50	<1.0	<0.50	<0.010	<0.10	<0.0010	<0.050	<0.050
Carbon Tetrachloride	mg/L	*0.00017*	*0.0050*	<0.0010	<0.0010	<0.50	<1.0	<0.50	<0.010	<0.10	<0.0010	<0.050	<0.050
Total CVOCs	mg/L			***0.73***	***0.055***	***421***	***144***	***49***	***1.2***	***93***	***0.00066***	***45***	***31***
Other Volatile Organic Compounds													
Acetone	mg/L	*0.61*	--	**0.018 J**	**0.041 J**	<25	<50	<25	<0.50	<5.0	**0.012**	<2.5	<2.5
Chloroform	mg/L	*0.0062*	--	<0.0050	<0.0050	**0.22 J**	**0.33 J**	<2.5	<0.050	**0.034 J**	<0.0050	**0.021 J**	**0.018 J**
2-Butanone (MEK)	mg/L	*1.9*	--	**0.0048 J**	**0.0062 J**	<5.0	<10	<5.0	<0.10	<1.0	<0.010	<0.50	<0.50
Methylene Chloride	mg/L	*0.0043*	*0.0050*	**0.0008 J**	<0.0050	<2.5	**0.37 J**	<2.5	**0.0034 J**	<0.50	<0.0050	**0.015 J**	<0.25
4-Methyl-2-pentanone (MIBK)	mg/L	*0.16*	--	<0.010	<0.010	<0.010	<0.10	<0.50	<0.10	<0.20	<0.10	<0.25	<0.010
Benzene	mg/L	*0.00034*	*0.0050*	<0.0010	<0.0010	<0.50	<1.0	<0.50	<0.010	<0.10	<0.0010	<0.050	<0.050
n-Butylbenzene	mg/L	*0.24*	--	<0.0010	<0.0010	<0.0010	<0.010	<0.050	<0.010	<0.020	<0.010	<0.025	<0.0010
Ethylbenzene	mg/L	*0.0029*	*0.70*	<0.0010	<0.0010	<0.0010	<0.010	<0.050	<0.010	<0.020	**0.017**	<0.025	<0.0010
Isopropylbenzene	mg/L	*0.66*	--	<0.0010	<0.0010	<0.0010	<0.010	<0.050	<0.010	<0.020	**0.0046 J**	<0.025	<0.0010
Naphthalene	mg/L	*0.0062*	--	**0.00043 J**	<0.0050	<2.5	<5.0	<2.5	<0.050	<0.50	<0.0050	<0.25	<0.25
Toluene	mg/L	*0.72*	*1.0*	<0.0050	<0.0050	<2.5	<5.0	<2.5	<0.050	<0.50	<0.0050	<0.25	<0.25
1,2,4-Trimethylbenzene	mg/L	*0.012*	--	<0.0010	<0.0010	<0.50	<1.0	<0.50	<0.010	<0.10	<0.0010	<0.050	<0.050
1,2,3-Trimethylbenzene	mg/L	--	--	<0.0010	<0.0010	<0.50	<1.0	<0.50	<0.010	<0.10	<0.0010	<0.050	<0.050
1,3,5-Trimethylbenzene	mg/L	*0.012*	--	<0.0010	<0.0010	<0.50	<1.0	<0.50	<0.010	<0.10	<0.0010	<0.050	<0.050
Xylenes, Total	mg/L	*0.21*	*10*	<0.0030	<0.0030	<0.0030	<0.030	<0.15	<0.030	<0.060	**0.33**	<0.075	<0.0030
Total Petroleum Hydrocarbon													
TPH - Oil & Grease	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Metals													
Arsenic	mg/L	*0.000045*	*0.010*	---	---	---	---	---	---	---	---	---	---
Barium	mg/L	*2.6*	*2.0*	---	---	---	---	---	---	---	---	---	---
Cadmium	mg/L	*0.018*	*0.005*	---	---	---	---	---	---	---	---	---	---
Chromium	mg/L	*0.11*	*0.10*	---	---	---	---	---	---	---	---	---	---
Lead	mg/L	--	*0.015*	---	---	---	---	---	---	---	---	---	---
Mercury	mg/L	*0.011*	*0.002*	---	---	---	---	---	---	---	---	---	---
Nickel	mg/L	*0.73*	---	---	---	---	---	---	---	---	---	---	---
Selenium	mg/L	*0.18*	*0.05*	---	---	---	---	---	---	---	---	---	---

Table 7
Summary of Water Analytical Results, 2004-2008 - Surface Water, Seeps, and Temporary Wells
RBTC LDB #1, Leitchfield, Kentucky
MACTEC Project No. 6680-04-9537

			Field Sample ID	GP-41	GP-42	GP-44	GP-46	GP-48	GP-50	GP-52	GP-53	GP-54	GP-55
			Sample Collection Date	05/16/08	05/16/08	05/16/08	05/19/08	05/19/08	05/19/08	05/20/08	05/19/08	05/19/08	05/20/08
	Units	*PRG*	*MCL*										
Chlorinated Volatile Organic Compounds													
Tetrachloroethene	mg/L	*0.00066*	*0.0050*	**0.0065**	<0.25	**0.016**	<0.0010	<0.0010	**0.0036**	<0.010	**0.56**	**0.12**	**0.00048 J**
Trichloroethene	mg/L	*0.000028*	*0.0050*	**3.2**	**210**	**1.7**	**0.19**	<0.0010	**3.6**	**5.0**	**160**	**52**	**0.37**
1,1-Dichloroethene	mg/L	*0.34*	*0.0070*	**0.0038**	<0.25	**0.066**	**0.0030**	<0.0010	**0.0067**	**0.016**	**0.46**	**0.34**	**0.014**
cis-1,2-Dichloroethene	mg/L	*0.061*	*0.070*	**0.86**	**6.2**	**3.0**	**0.82**	**0.020**	**2.0**	**4.2**	**22**	**7.4**	**0.38**
trans-1,2-Dichloroethene	mg/L	*0.12*	*0.10*	**0.012**	<0.25	**0.0049 J**	**0.0060**	<0.0010	**0.0052 J4**	**0.066**	**0.1 J4**	**0.046 J4**	**0.0013**
Vinyl Chloride	mg/L	*0.00002*	*0.0020*	**0.019**	<0.25	**0.0096 J**	**0.098**	**0.0014**	**0.091 J4**	**0.027**	**0.65 J4**	**0.35**	**0.0025 J3**
1,1,1-Trichloroethane	mg/L	*3.2*	*0.20*	<0.0010	<0.25	**0.0073 J**	<0.0010	<0.0010	<0.0010	<0.010	**0.030**	<0.0010	<0.0010
1,1,2-Trichloroethane	mg/L	*0.0050*	*0.00020*	<0.0010	<0.25	<0.010	<0.0010	<0.0010	<0.0010	<0.010	**0.018 J**	**0.0064**	<0.0010
1,1-Dichloroethane	mg/L	*0.81*	--	**0.00066 J**	<0.25	**0.098**	**0.00092 J**	**0.00034 J**	**0.0048**	**0.011**	**0.14**	**0.096**	**0.0038**
1,2-Dichloroethane	mg/L	*0.00012*	*0.005*	**0.00057 J**	<0.25	<0.010	<0.0010	<0.0010	<0.0010	<0.010	**0.01 J**	**0.0053**	<0.0010
Carbon Tetrachloride	mg/L	*0.00017*	*0.0050*	<0.0010	<0.25	<0.010	<0.0010	<0.0010	<0.0010	<0.010	<0.025	**0.00046 J**	<0.0010
Total CVOCs	mg/L			***4.1***	***216***	***4.9***	***1.1***	***0.022***	***5.7***	***9.3***	***184***	***60***	***0.77***
Other Volatile Organic Compounds													
Acetone	mg/L	*0.61*	--	**0.046 J**	<13	<0.50	**0.014 J**	<0.050	<0.050	<0.50	<1.3	<0.050	<0.050
Chloroform	mg/L	*0.0062*	--	**0.00074 J**	**0.10 J**	<0.050	<0.0050	<0.0050	<0.0050	<0.050	<0.13	**0.0055**	<0.0050
2-Butanone (MEK)	mg/L	*1.9*	--	**0.008 J**	<2.5	<0.10	<0.010	<0.010	<0.010	<0.10	<0.25	<0.010	<0.010
Methylene Chloride	mg/L	*0.0043*	*0.0050*	**0.00042 J**	<1.3	**0.0038 J**	**0.00078 J**	**0.00076 J**	**0.0011 J**	<0.050	**0.055 J**	**0.0049 J**	<0.0050
4-Methyl-2-pentanone (MIBK)	mg/L	*0.16*	--	<0.10	<0.010	<0.20	<0.010	<0.010	<0.010	<0.10	<0.25	<0.010	<0.010
Benzene	mg/L	*0.00034*	*0.0050*	**0.00032 J**	<0.25	<0.010	<0.0010	<0.0010	**0.00034 J**	<0.010	**0.0079 J**	**0.00089 J**	<0.0010
n-Butylbenzene	mg/L	*0.24*	--	<0.010	<0.0010	<0.020	<0.0010	<0.0010	<0.0010	<0.010	<0.025	<0.0010	<0.0010
Ethylbenzene	mg/L	*0.0029*	*0.70*	<0.010	<0.0010	<0.020	<0.0010	<0.0010	<0.0010	<0.010	<0.025	**0.00031 J**	<0.0010
Isopropylbenzene	mg/L	*0.66*	--	<0.010	<0.0010	<0.020	<0.0010	<0.0010	<0.0010	<0.010	<0.025	<0.0010	<0.0010
Naphthalene	mg/L	*0.0062*	--	<0.0050	<1.3	**0.064**	<0.0050	<0.0050	<0.0050	<0.050	<0.13	<0.0050	<0.0050
Toluene	mg/L	*0.72*	*1.0*	**0.0014 J**	<1.3	<0.050	<0.0050	<0.0050	**0.00034 J**	<0.050	**0.02 J**	**0.0029 J,J8**	**0.00034 J**
1,2,4-Trimethylbenzene	mg/L	*0.012*	--	<0.0010	<0.25	**0.017**	<0.0010	<0.0010	<0.0010	<0.010	<0.025	<0.0010	<0.0010
1,2,3-Trimethylbenzene	mg/L	--	--	<0.0010	<0.25	**0.017**	<0.0010	<0.0010	<0.0010	<0.010	<0.025	<0.0010	<0.0010
1,3,5-Trimethylbenzene	mg/L	*0.012*	--	<0.0010	<0.25	**0.0062 J**	<0.0010	<0.0010	<0.0010	<0.010	<0.025	<0.0010	<0.0010
Xylenes, Total	mg/L	*0.21*	*10*	<0.030	**0.0021 J**	<0.060	<0.0030	<0.0030	<0.0030	<0.030	**0.027 J**	**0.0086**	<0.0030
Total Petroleum Hydrocarbon													
TPH - Oil & Grease	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Metals													
Arsenic	mg/L	*0.000045*	*0.010*	---	---	---	---	---	---	---	---	---	---
Barium	mg/L	*2.6*	*2.0*	---	---	---	---	---	---	---	---	---	---
Cadmium	mg/L	*0.018*	*0.005*	---	---	---	---	---	---	---	---	---	---
Chromium	mg/L	*0.11*	*0.10*	---	---	---	---	---	---	---	---	---	---
Lead	mg/L	--	*0.015*	---	---	---	---	---	---	---	---	---	---
Mercury	mg/L	*0.011*	*0.002*	---	---	---	---	---	---	---	---	---	---
Nickel	mg/L	*0.73*	---	---	---	---	---	---	---	---	---	---	---
Selenium	mg/L	*0.18*	*0.05*	---	---	---	---	---	---	---	---	---	---

Table 7

Summary of Water Analytical Results, 2004-2008 - Surface Water, Seeps, and Temporary Wells

RBTC LDB #1, Leitchfield, Kentucky

MACTEC Project No. 6680-04-9537

			Field Sample ID	GP-56	GP-57	GP-58	GP-59	GP-60	GP-61	GP-62	GP-63	GP-64	GP-65
			Sample Collection Date	05/28/08	05/22/08	05/28/08	05/20/08	05/22/08	05/22/08	05/19/08	05/20/08	05/21/08	05/21/08
	Units	***PRG***	***MCL***										
Chlorinated Volatile Organic Compounds													
Tetrachloroethene	mg/L	*0.00066*	*0.0050*	**0.00043 J**	<0.0010	<0.0010	<0.0010	<0.0010	<0.010 J3	<0.0010	<0.020	<0.0010	<0.0010
Trichloroethene	mg/L	*0.000028*	*0.0050*	**0.19**	<0.0010	<0.0010	**0.0085**	**0.041**	**0.26**	**0.045**	**2.0**	**0.14**	**0.28**
1,1-Dichloroethene	mg/L	*0.34*	*0.0070*	**0.0008 J**	<0.0010	<0.0010	**0.17**	<0.0010	<0.010	<0.0010	<0.020	<0.0010	**0.001**
cis-1,2-Dichloroethene	mg/L	*0.061*	*0.070*	**0.046**	<0.0010	<0.0010	**0.019**	**0.0061**	**0.088**	**0.0056**	**0.44**	**0.027**	**0.16**
trans-1,2-Dichloroethene	mg/L	*0.12*	*0.10*	<0.0010	<0.0010	<0.0010	<0.0010	**0.0016 J4**	**0.0058 J**	<0.0010 J4	<0.020	**0.00034 J**	**0.0019**
Vinyl Chloride	mg/L	*0.00002*	*0.0020*	<0.0010	<0.0010	<0.0010	**0.0031 J3**	<0.0010 J4	<0.010	**0.0025**	**0.015 J**	<0.0010 J3	**0.0013 J3**
1,1,1-Trichloroethane	mg/L	*3.2*	*0.20*	<0.0010	<0.0010	<0.0010	**0.0048**	<0.0010	<0.010	<0.0010	<0.020	<0.0010	<0.0010
1,1,2-Trichloroethane	mg/L	*0.0050*	*0.00020*	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.010	<0.0010	<0.020	<0.0010	<0.0010
1,1-Dichloroethane	mg/L	*0.81*	--	**0.00084 J**	<0.0010	<0.0010	**0.076**	**0.00064 J**	<0.010	<0.0010	<0.020	<0.0010	<0.0010
1,2-Dichloroethane	mg/L	*0.00012*	*0.005*	<0.0010	<0.0010	<0.0010	**0.0029**	<0.0010	<0.010	<0.0010	<0.020	<0.0010	<0.0010
Carbon Tetrachloride	mg/L	*0.00017*	*0.0050*	<0.0010 J4	<0.0010	<0.0010	<0.0010	<0.0010	<0.010	<0.0010	<0.020	<0.0010	<0.0010
Total CVOCs	mg/L			***0.24***	***0***	***0***	***0.28***	***0.049***	***0.35***	***0.053***	***2.5***	***0.17***	***0.44***
Other Volatile Organic Compounds													
Acetone	mg/L	*0.61*	--	**0.021 J**	**0.017 J**	**0.012 J**	<0.050	<0.050	<0.50	<0.050	<1.0	<0.050	<0.050
Chloroform	mg/L	*0.0062*	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.0050	<0.10	<0.0050	<0.0050
2-Butanone (MEK)	mg/L	*1.9*	--	**0.0095 J**	<0.010	<0.010	<0.010	<0.010	<0.10	<0.010	<0.20	<0.010	<0.010
Methylene Chloride	mg/L	*0.0043*	*0.0050*	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	**0.00096 J**	<0.10	<0.0050	<0.0050
4-Methyl-2-pentanone (MIBK)	mg/L	*0.16*	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.10	<0.010	<0.20	<0.010	<0.010
Benzene	mg/L	*0.00034*	*0.0050*	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.010	<0.0010	<0.020	<0.0010	<0.0010
n-Butylbenzene	mg/L	*0.24*	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.010	<0.0010	<0.020	<0.0010	<0.0010
Ethylbenzene	mg/L	*0.0029*	*0.70*	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.010	<0.0010	<0.020	<0.0010	<0.0010
Isopropylbenzene	mg/L	*0.66*	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.010 J3	<0.0010	<0.020	<0.0010	<0.0010
Naphthalene	mg/L	*0.0062*	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.0050	<0.10	<0.0050	<0.0050
Toluene	mg/L	*0.72*	*1.0*	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.0050	<0.10	<0.0050	<0.0050
1,2,4-Trimethylbenzene	mg/L	*0.012*	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.010 J3	<0.0010	<0.020	<0.0010	<0.0010
1,2,3-Trimethylbenzene	mg/L	--	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.010	<0.0010	<0.020	<0.0010	<0.0010
1,3,5-Trimethylbenzene	mg/L	*0.012*	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.010	<0.0010	<0.020	<0.0010	<0.0010
Xylenes, Total	mg/L	*0.21*	*10*	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.030 J3	<0.0030	<0.060	<0.0030	<0.0030
Total Petroleum Hydrocarbon													
TPH - Oil & Grease	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Metals													
Arsenic	mg/L	*0.000045*	*0.010*	---	---	---	---	---	---	---	---	---	---
Barium	mg/L	*2.6*	*2.0*	---	---	---	---	---	---	---	---	---	---
Cadmium	mg/L	*0.018*	*0.005*	---	---	---	---	---	---	---	---	---	---
Chromium	mg/L	*0.11*	*0.10*	---	---	---	---	---	---	---	---	---	---
Lead	mg/L	--	*0.015*	---	---	---	---	---	---	---	---	---	---
Mercury	mg/L	*0.011*	*0.002*	---	---	---	---	---	---	---	---	---	---
Nickel	mg/L	*0.73*	---	---	---	---	---	---	---	---	---	---	---
Selenium	mg/L	*0.18*	*0.05*	---	---	---	---	---	---	---	---	---	---

Table 7
Summary of Water Analytical Results, 2004-2008 - Surface Water, Seeps, and Temporary Wells
RBTC LDB #1, Leitchfield, Kentucky
MACTEC Project No. 6680-04-9537

			Field Sample ID	GP-66	GP-67	GP-68	GP-69	GP-70	GP-72	GP-73	GP-74	GP-76	GP-77
			Sample Collection Date	05/21/08	05/21/08	05/21/08	05/21/08	05/21/08	05/21/08	05/21/08	05/21/08	05/21/08	05/22/08
	Units	***PRG***	***MCL***										
Chlorinated Volatile Organic Compounds													
Tetrachloroethene	mg/L	*0.00066*	*0.0050*	<0.0010	<0.0010	<0.0010	**0.0043**	<0.010	<0.050	**0.0043 J**	**0.037**	**0.072**	<0.025
Trichloroethene	mg/L	*0.000028*	*0.0050*	**0.0017**	<0.0010	**0.0022**	**0.16**	**0.87**	**0.26**	**2.3**	**13**	**0.59**	**0.73**
1,1-Dichloroethene	mg/L	*0.34*	*0.0070*	<0.0010	<0.0010	<0.0010	**0.02**	**0.0079 J**	<0.050	**0.02**	**0.85**	**1.2**	**0.024 J**
cis-1,2-Dichloroethene	mg/L	*0.061*	*0.070*	**0.0027**	**0.00054 J**	**0.062**	**0.89**	**5.0**	**8.2**	**2.4**	**3.3**	**1.3**	**2.7**
trans-1,2-Dichloroethene	mg/L	*0.12*	*0.10*	<0.0010	<0.0010	**0.00068 J**	**0.0024**	**0.025**	**0.05 J**	**0.014**	**0.042**	**0.011**	**0.013 J**
Vinyl Chloride	mg/L	*0.00002*	*0.0020*	<0.0010 J3	<0.0010 J3	**0.09 J3**	**0.076 J3**	**0.27 J3**	**7.0 J**	**0.25 J3**	**0.21 J3**	**0.38 J3**	**0.15**
1,1,1-Trichloroethane	mg/L	*3.2*	*0.20*	<0.0010	<0.0010	<0.0010	**0.00058 J**	<0.010	<0.050	<0.010	**0.012 J**	**0.066**	<0.025
1,1,2-Trichloroethane	mg/L	*0.0050*	*0.00020*	<0.0010	<0.0010	<0.0010	<0.0010	<0.010	<0.050	<0.010	<0.020	<0.010	<0.025
1,1-Dichloroethane	mg/L	*0.81*	--	<0.0010	<0.0010	<0.0010	**0.019**	**0.0035 J**	**0.14**	**0.0086 J**	**0.27**	**0.43**	**0.07**
1,2-Dichloroethane	mg/L	*0.00012*	*0.005*	<0.0010	<0.0010	<0.0010	**0.00033 J**	<0.010	<0.050	<0.010	**0.0068 J**	**0.0083 J**	<0.025
Carbon Tetrachloride	mg/L	*0.00017*	*0.0050*	<0.0010	<0.0010	<0.0010	<0.0010	<0.010	<0.050	<0.010	<0.020	**0.012**	<0.025
Total CVOCs	mg/L			***0.0044***	***0.00054***	***0.15***	***1.2***	***6.2***	***16***	***5.0***	***18***	***4.1***	***3.7***
Other Volatile Organic Compounds													
Acetone	mg/L	*0.61*	--	<0.050	<0.050	<0.050	**0.011 J**	<0.50	<2.5	<0.50	<1.0	<0.50	<1.3
Chloroform	mg/L	*0.0062*	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.25	<0.050	<0.10	<0.050	<0.13
2-Butanone (MEK)	mg/L	*1.9*	--	<0.010	<0.010	<0.010	<0.010	<0.10	<0.50	<0.10	<0.20	<0.10	<0.25
Methylene Chloride	mg/L	*0.0043*	*0.0050*	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.25	<0.050	<0.10	<0.050	<0.13
4-Methyl-2-pentanone (MIBK)	mg/L	*0.16*	--	<0.010	<0.010	<0.010	<0.010	<0.10	<0.50	<0.10	<0.20	<0.10	<0.25
Benzene	mg/L	*0.00034*	*0.0050*	<0.0010	<0.0010	<0.0010	<0.0010	<0.010	<0.050	<0.010	<0.020	**0.0037 J**	<0.025
n-Butylbenzene	mg/L	*0.24*	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.010	<0.050	<0.010	<0.020	<0.010	<0.025
Ethylbenzene	mg/L	*0.0029*	*0.70*	<0.0010	<0.0010	<0.0010	<0.0010	<0.010	<0.050	<0.010	<0.020	**0.017**	<0.025
Isopropylbenzene	mg/L	*0.66*	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.010	<0.050	<0.010	<0.020	**0.0046 J**	<0.025
Naphthalene	mg/L	*0.0062*	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.25	<0.050	<0.10	<0.050	<0.13
Toluene	mg/L	*0.72*	*1.0*	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.25	<0.050	<0.10	**0.0031 J**	<0.13
1,2,4-Trimethylbenzene	mg/L	*0.012*	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.010	<0.050	<0.010	<0.020	**0.0039 J**	<0.025
1,2,3-Trimethylbenzene	mg/L	--	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.010	<0.050	<0.010	<0.020	**0.0028 J**	<0.025
1,3,5-Trimethylbenzene	mg/L	*0.012*	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.010	<0.050	<0.010	<0.020	**0.0025 J**	<0.025
Xylenes, Total	mg/L	*0.21*	*10*	<0.0030	<0.0030	<0.0030	<0.0030	<0.030	<0.15	<0.030	<0.060	**0.33**	<0.075
Total Petroleum Hydrocarbon													
TPH - Oil & Grease	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Metals													
Arsenic	mg/L	*0.000045*	*0.010*	---	---	---	---	---	---	---	---	---	---
Barium	mg/L	*2.6*	*2.0*	---	---	---	---	---	---	---	---	---	---
Cadmium	mg/L	*0.018*	*0.005*	---	---	---	---	---	---	---	---	---	---
Chromium	mg/L	*0.11*	*0.10*	---	---	---	---	---	---	---	---	---	---
Lead	mg/L	--	*0.015*	---	---	---	---	---	---	---	---	---	---
Mercury	mg/L	*0.011*	*0.002*	---	---	---	---	---	---	---	---	---	---
Nickel	mg/L	*0.73*	---	---	---	---	---	---	---	---	---	---	---
Selenium	mg/L	*0.18*	*0.05*	---	---	---	---	---	---	---	---	---	---

Table 7

Summary of Water Analytical Results, 2004-2008 - Surface Water, Seeps, and Temporary Wells

RBTC LDB #1, Leitchfield, Kentucky

MACTEC Project No. 6680-04-9537

			Field Sample ID	GP-79	GP-80	GP-81	GP-82
			Sample Collection Date	05/28/08	05/28/08	05/22/08	05/22/08
	Units	***PRG***	***MCL***				
Chlorinated Volatile Organic Compounds							
Tetrachloroethene	mg/L	*0.00066*	*0.0050*	<0.0010	<0.010	<0.0010	<0.020
Trichloroethene	mg/L	*0.000028*	*0.0050*	<0.0010	**0.48**	<0.0010	**1.1**
1,1-Dichloroethene	mg/L	*0.34*	*0.0070*	<0.0010	<0.010	<0.0010 J3	<0.020 J3
cis-1,2-Dichloroethene	mg/L	*0.061*	*0.070*	**0.012**	**0.17**	**0.00046 J**	**1.8**
trans-1,2-Dichloroethene	mg/L	*0.12*	*0.10*	<0.0010	<0.010	<0.0010 J3	**0.016 J,J3**
Vinyl Chloride	mg/L	*0.00002*	*0.0020*	**0.0014**	<0.010	<0.0010 J3	<0.020 J3
1,1,1-Trichloroethane	mg/L	*3.2*	*0.20*	<0.0010	<0.010	<0.0010	<0.020
1,1,2-Trichloroethane	mg/L	*0.0050*	*0.00020*	<0.0010	<0.010	<0.0010	<0.020
1,1-Dichloroethane	mg/L	*0.81*	--	**0.0024**	<0.010	<0.0010	<0.020
1,2-Dichloroethane	mg/L	*0.00012*	*0.005*	<0.0010	<0.010	<0.0010	<0.020
Carbon Tetrachloride	mg/L	*0.00017*	*0.0050*	<0.0010	<0.010	<0.0010	<0.020
Total CVOCs	mg/L			***0.016***	***0.65***	***0.00046***	***2.9***
Other Volatile Organic Compounds							
Acetone	mg/L	*0.61*	--	**0.023 J**	<0.50	**0.034 J**	**0.19 J**
Chloroform	mg/L	*0.0062*	--	<0.0050	<0.050	<0.0050	<0.10
2-Butanone (MEK)	mg/L	*1.9*	--	**0.014**	<0.10	<0.010	<0.20
Methylene Chloride	mg/L	*0.0043*	*0.0050*	<0.0050	<0.050	<0.0050	<0.10
4-Methyl-2-pentanone (MIBK)	mg/L	*0.16*	--	<0.010	<0.10	<0.010	<0.20
Benzene	mg/L	*0.00034*	*0.0050*	<0.0010	<0.010	<0.0010	<0.020
n-Butylbenzene	mg/L	*0.24*	--	<0.0010	<0.010	<0.0010	<0.020
Ethylbenzene	mg/L	*0.0029*	*0.70*	<0.0010	<0.010	<0.0010	<0.020
Isopropylbenzene	mg/L	*0.66*	--	<0.0010	<0.010	<0.0010	<0.020
Naphthalene	mg/L	*0.0062*	--	<0.0050	<0.050	**0.0033 J,J4,J3**	<0.10 J4,J3
Toluene	mg/L	*0.72*	*1.0*	<0.0050	<0.050	**0.00074 J**	<0.10
1,2,4-Trimethylbenzene	mg/L	*0.012*	--	<0.0010	<0.010	**0.0013**	<0.020
1,2,3-Trimethylbenzene	mg/L	--	--	<0.0010	<0.010	**0.00052 J**	<0.020
1,3,5-Trimethylbenzene	mg/L	*0.012*	--	<0.0010	<0.010	**0.00034 J**	<0.020
Xylenes, Total	mg/L	*0.21*	*10*	<0.0030	<0.030	**0.0021 J**	<0.060
Total Petroleum Hydrocarbon							
TPH - Oil & Grease	mg/L	---	---	---	---	---	---
Metals							
Arsenic	mg/L	*0.000045*	*0.010*	---	---	---	---
Barium	mg/L	*2.6*	*2.0*	---	---	---	---
Cadmium	mg/L	*0.018*	*0.005*	---	---	---	---
Chromium	mg/L	*0.11*	*0.10*	---	---	---	---
Lead	mg/L	--	*0.015*	---	---	---	---
Mercury	mg/L	*0.011*	*0.002*	---	---	---	---
Nickel	mg/L	*0.73*	---	---	---	---	---
Selenium	mg/L	*0.18*	*0.05*	---	---	---	---

Table 7
Summary of Water Analytical Results, 2004-2008 - Surface Water, Seeps, and Temporary Wells
RBTC LDB #1, Leitchfield, Kentucky
MACTEC Project No. 6680-04-9537

Prepared by: ALD 7/2/08
Checked by: SMD 7/31/08

Notes:

mg/l Milligrams per liter
--- Not analyzed, not established, or not available
MCL USEPA Maximum Contaminant Level, or Action Level, for drinking watei
PRG USEPA Region 9 Preliminary Remediation Goal for tap watei
Detected values are indicated in **bold**.
Values exceeding the MCL (or, if no MCL is established, the tap water PRG) are shadec
See laboratory reports for information on laboratory qualifiers
"*Total CVOCs*" is calculated as the sum of the CVOC values, non-detects are counted as zerc
Laboratory Qualifiers:

J	(EPA) - Estimated value below the lowest calibration point. Confidence correlates with concentration
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits
J3	The associated batch QC was outside the established quality control range for precision
J4	The associated batch QC was outside the established quality control range for accuracy.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low
J8	The internal standard associated with this data responded abnormally low. The data is likely to show a high bias concerning the results
O	(ESC) Sample diluted due to matrix interferences that impaired ability to make an accurate analytical determination. Detection limit elevated due to dilutior
V	Additional QC information: the sample concentration is too high to evaluate accurate spike recoveries

Table 8
Summary of Water Analytical Results, 2004-2008 - Monitoring Wells
RBTC LDB #1, Leitchfield, Kentucky
MACTEC Project No. 6680-04-9537

			Field Sample ID	MW-1	MW-1	MW-2	MW-2	MW-3	MW-3	MW-4	MW-4	MW-5	MW-5	MW-6
			Sample Collection Date	03/22/07	06/11/08	03/22/07	06/04/08	03/22/07	06/04/08	03/22/07	06/04/08	03/22/07	06/05/08	03/22/07
	Units	***PRG***	***MCL***											
Chlorinated Volatile Organic Compounds														
Tetrachloroethene	mg/L	*0.00066*	*0.0050*	<0.0010	<0.0010	**0.0045 J**	<0.050	**0.0049 J**	<0.050	<0.0010	<0.010	<0.050	<0.10	<0.001
Trichloroethene	mg/L	*0.000028*	*0.0050*	**0.14**	**0.0016**	**2.1**	**1.1**	**0.72**	**0.43**	**0.31**	**0.085**	**25**	**19**	**0.018**
1,1-Dichloroethene	mg/L	*0.34*	*0.0070*	**0.033**	**0.024**	**3.6**	**5.0**	**1.0**	**4.2**	**0.11**	**0.15**	**0.26**	**0.2**	**0.014**
cis-1,2-Dichloroethene	mg/L	*0.061*	*0.070*	**0.052**	<0.0010	**0.24**	**0.2**	**0.12**	**0.083**	**0.85**	**1.2**	**8.4 V**	**8.8**	**0.0009 J**
trans-1,2-Dichloroethene	mg/L	*0.12*	*0.10*	**0.00046 J**	<0.0010	**0.0033 J**	<0.050	**0.0036 J**	<0.050	**0.0031**	<0.010	**0.065**	**0.065 J**	<0.0010
Vinyl Chloride	mg/L	*0.00002*	*0.0020*	**0.004**	<0.0010	**0.013**	<0.050	<0.010	<0.050	**0.41**	**0.68**	**0.35**	**0.17**	<0.0010
1,1,1-Trichloroethane	mg/L	*3.2*	*0.20*	**0.0022**	**0.0014**	**0.037**	**0.87**	**0.024**	**0.22**	<0.0010	<0.010	<0.050	<0.10	<0.0010
1,1,2-Trichloroethane	mg/L	*0.0050*	*0.00020*	<0.0010	<0.0010	<0.0050	**0.048 J**	<0.010	<0.050	<0.0010	<0.010	<0.050	<0.10	<0.0010
1,1-Dichloroethane	mg/L	*0.81*	--	**0.008**	**0.0034**	**0.61**	**0.77**	**0.21**	**0.47**	**0.077**	**0.14**	**0.087**	**0.099 J**	**0.0017**
1,2-Dichloroethane	mg/L	*0.00012*	*0.005*	<0.0010	<0.0010	**0.012**	<0.050	**0.0046 J**	**0.014 J**	**0.00096 J**	<0.010	<0.050	<0.10	<0.0010
Carbon Tetrachloride	mg/L	*0.00017*	*0.0050*	<0.0010	<0.0010	<0.0050	<0.050	<0.010	<0.050	<0.0010	<0.010	<0.050	<0.10	<0.0010
Total CVOCs	mg/L			***0.24***	***0.030***	***6.6***	***8.0***	***2.1***	***5.4***	***1.8***	***2.3***	***34***	***28***	***0.035***
Other Volatile Organic Compounds														
Acetone	mg/L	*0.61*	--	<0.050	<0.050	<0.25	<2.5	<0.50	<2.5	<0.050	<0.50	<2.5	<5.0	<0.050
Chloroform	mg/L	*0.0062*	--	<0.0050	<0.0050	<0.025	<0.25	<0.050	<0.25	<0.0050	<0.050	<0.25	<0.50	<0.0050
2-Butanone (MEK)	mg/L	*1.9*	--	<0.010	<0.010	<0.050	<0.50	<0.10	<0.50	<0.010	<0.10	<0.50	<1.0 J3	<0.010
Methylene Chloride	mg/L	*0.0043*	*0.0050*	<0.0050	<0.0050	<0.025	**0.025 J**	<0.050	**0.022 J**	<0.0050	<0.050	<0.25	<0.50	<0.0050
4-Methyl-2-pentanone (MIBK)	mg/L	*0.16*	--	<0.010	<0.010	<0.050	<0.25	<0.10	<0.010	<0.010	<0.010	<0.50	**0.0065 J**	<0.010
Benzene	mg/L	*0.00034*	*0.0050*	<0.0010	<0.0010	<0.0050	<0.050	<0.010	<0.050	<0.0010	<0.010	<0.050	<0.10	<0.0010
n-Butylbenzene	mg/L	*0.24*	--	<0.0010	<0.0010	<0.0050	<0.025	<0.010	<0.0010	<0.0010	<0.0010	<0.025	<0.0010	<0.0010
Ethylbenzene	mg/L	*0.0029*	*0.70*	<0.0010	**0.00031 J**	<0.0050	<0.025	<0.010	<0.0010	<0.0010	<0.0010	<0.025	<0.0010	<0.0010
Isopropylbenzene	mg/L	*0.66*	--	<0.0010	<0.0010	<0.0050	<0.025	<0.010	<0.0010	<0.0010	<0.0010	<0.025	<0.0010	<0.0010
Naphthalene	mg/L	*0.0062*	--	<0.0050	<0.0050	<0.025	**0.042 J**	<0.050	**0.02 J**	<0.0050	**0.0029 J**	<0.25	<0.50	<0.0050
Toluene	mg/L	*0.72*	*1.0*	<0.0050	<0.0050	<0.025	<0.25	<0.050	<0.25	<0.0050	<0.050	<0.25	<0.50	<0.0050
1,2,4-Trimethylbenzene	mg/L	*0.012*	--	<0.0010	<0.0010	<0.0050	<0.050	<0.010	<0.050	<0.0010	<0.010	<0.050	<0.10	<0.0010
1,2,3-Trimethylbenzene	mg/L	--	--	<0.0010	<0.0010	<0.0050	<0.050	<0.010	<0.050	<0.0010	<0.010	<0.050	<0.10	<0.0010
1,3,5-Trimethylbenzene	mg/L	*0.012*	--	<0.0010	<0.0010	<0.0050	<0.050	<0.010	<0.050	<0.0010	<0.010	<0.050	<0.10	<0.0010
Xylenes, Total	mg/L	*0.21*	*10*	<0.0030	**0.0086**	<0.015	<0.075	<0.030	**0.00099 J**	<0.0030	<0.0030	<0.015	**0.0011 J**	<0.0030
Total Petroleum Hydrocarbon														
TPH - Oil & Grease	mg/L	---	---	---	**1.7 J**	---	<5.6	---	<5.0	---	<5.0	---	<5.6	---
Metals														
Arsenic	mg/L	*0.000045*	*0.010*	<0.020	---	<0.020	---	<0.020	---	<0.020	---	<0.020	---	<0.020
Barium	mg/L	*2.6*	*2.0*	**0.29**	---	**0.094**	---	**0.080**	---	**0.095**	---	**0.22**	---	**0.062**
Cadmium	mg/L	*0.018*	*0.005*	**0.0017 J**	---	<0.005	---	<0.005	---	<0.005	---	<0.005	---	<0.005
Chromium	mg/L	*0.11*	*0.10*	**0.089**	**0.0046 J**	**0.0033 J**	**0.0013**	**0.0058 J**	<0.0010	**0.0026 J**	**0.0013**	<0.010	**0.0014**	<0.010
Lead	mg/L	--	*0.015*	**0.043**	**0.0034 J**	<0.005	<0.0010	<0.005	<0.0010	<0.005	<0.0010	<0.005	<0.0010	<0.005
Mercury	mg/L	*0.011*	*0.002*	<0.0002	---	<0.0002	---	<0.0002	---	<0.0002	---	<0.0002	---	<0.0002
Nickel	mg/L	*0.73*	---	**0.065**	**0.012 J**	<0.020	**0.0053**	<0.020	**0.0064**	<0.020	**0.0053**	<0.020	0.0032	<0.020
Selenium	mg/L	*0.18*	*0.05*	**0.019 J**	---	<0.020	---	<0.020	---	**0.012 J**	---	**0.010 J**	---	**0.012 J**

Table 8
Summary of Water Analytical Results, 2004-2008 - Monitoring Wells
RBTC LDB #1, Leitchfield, Kentucky
MACTEC Project No. 6680-04-9537

			Field Sample ID	MW-6	MW-7	MW-7	MW-8	MW-8	MW-9	MW-10	MW-11A	MW-11B	MW-12A
			Sample Collection Date	06/05/08	03/22/07	06/05/08	03/22/07	06/05/08	06/10/08	06/10/08	06/06/08	06/06/08	06/10/08
	Units	***PRG***	***MCL***										
Chlorinated Volatile Organic Compounds													
Tetrachloroethene	mg/L	*0.00066*	*0.0050*	<0.0010	**0.00052 J**	<0.0010	<0.020	<0.050	**0.016**	<0.0010	**0.27 J**	<1.0	**0.24**
Trichloroethene	mg/L	*0.000028*	*0.0050*	**0.00040 J**	**0.29**	**0.080**	**9.7**	**6.0**	**13**	**0.090**	**56**	**98**	**76**
1,1-Dichloroethene	mg/L	*0.34*	*0.0070*	<0.0010	**0.0091**	**0.0017**	**0.019 J**	**0.043 J**	**0.056**	**0.0054**	**0.71**	<1.0	**0.82**
cis-1,2-Dichloroethene	mg/L	*0.061*	*0.070*	<0.0010	**0.12**	**0.18**	**0.41**	**0.59**	**2.6**	**0.041**	**3.3**	**11**	**5.8**
trans-1,2-Dichloroethene	mg/L	*0.12*	*0.10*	<0.0010	**0.0029**	**0.0039**	**0.0075 J**	<0.050	**0.055**	**0.0015**	<0.50	<1.0	**0.045**
Vinyl Chloride	mg/L	*0.00002*	*0.0020*	<0.0010	**0.0058**	**0.0051**	<0.020	<0.050	**0.16**	<0.0010	**0.16 J**	<1.0	**0.20**
1,1,1-Trichloroethane	mg/L	*3.2*	*0.20*	<0.0010	<0.0010	<0.0010	<0.020	<0.050	<0.0010	<0.0010	<0.50	<1.0	<0.010
1,1,2-Trichloroethane	mg/L	*0.0050*	*0.00020*	<0.0010	<0.0010	<0.0010	<0.020	<0.050	<0.0010	<0.0010	<0.50	<1.0	<0.010
1,1-Dichloroethane	mg/L	*0.81*	--	<0.0010	**0.0014**	**0.00041 J**	<0.020	<0.050	**0.016**	**0.0016**	<0.50	<1.0	**0.19**
1,2-Dichloroethane	mg/L	*0.00012*	*0.005*	<0.0010	<0.0010	<0.0010	<0.020	<0.050	<0.0010	<0.0010	<0.50	<1.0	<0.010
Carbon Tetrachloride	mg/L	*0.00017*	*0.0050*	<0.0010	<0.0010	<0.0010	<0.020	<0.050	<0.0010	<0.0010	<0.50	<1.0	<0.010
Total CVOCs	mg/L			***0.00040***	***0.43***	***0.27***	***10***	***6.6***	***16***	***0.14***	***60***	***109***	***83***
Other Volatile Organic Compounds													
Acetone	mg/L	*0.61*	--	<0.050	<0.050	<0.050	<1.0	<2.5	<0.050	<0.050	<25	<50	<0.50
Chloroform	mg/L	*0.0062*	--	<0.0050	<0.0050	<0.0050	<0.10	<0.25	**0.0016 J**	**0.00046 J**	<2.5	<5.0	**0.0042 J**
2-Butanone (MEK)	mg/L	*1.9*	--	<0.010 J3	<0.010	<0.010	<0.20	<0.50 J3	<0.010	<0.010	<5.0	<10	<0.10
Methylene Chloride	mg/L	*0.0043*	*0.0050*	**0.00056 J**	<0.0050	<0.0050 J3	<0.10	<0.25	**0.00071 J**	<0.0050	<2.5	<5.0	**0.0086 J**
4-Methyl-2-pentanone (MIBK)	mg/L	*0.16*	--	<5.0	<0.010	<10	<0.20	<5.0	<2.5	<0.10	<0.10	<1.0	<0.010
Benzene	mg/L	*0.00034*	*0.0050*	<0.0010	<0.0010	<0.0010	<0.020	<0.050	<0.0010	<0.0010	<0.50	<1.0	<0.010
n-Butylbenzene	mg/L	*0.24*	--	<0.50	<0.0010	<1.0	<0.020	<0.50	<0.25	**0.0033 J**	<0.010	<0.10	<0.0010
Ethylbenzene	mg/L	*0.0029*	*0.70*	<0.50	<0.0010	<1.0	<0.020	<0.50	<0.25	<0.010	<0.010	<0.10	<0.0010
Isopropylbenzene	mg/L	*0.66*	--	<0.50	<0.0010	<1.0	<0.020	<0.50	<0.25	<0.010	<0.010	<0.10	<0.0010
Naphthalene	mg/L	*0.0062*	--	<0.0050	<0.0050	<0.0050	<0.10	<0.25	<0.0050	<0.0050	<2.5	<5.0	<0.050
Toluene	mg/L	*0.72*	*1.0*	<0.0050	<0.0050	<0.0050	<0.10	<0.25	<0.0050	<0.0050	<2.5	<5.0	<0.050
1,2,4-Trimethylbenzene	mg/L	*0.012*	--	<0.0010	<0.0010	<0.0010	<0.020	<0.050	**0.001 J**	**0.00069 J**	<0.50	<1.0	**0.0068 J**
1,2,3-Trimethylbenzene	mg/L	--	--	<0.0010	<0.0010	<0.0010	<0.020	<0.050	<0.0010	<0.0010	<0.50	<1.0	<0.010
1,3,5-Trimethylbenzene	mg/L	*0.012*	--	<0.0010	<0.0010	<0.0010	<0.020	<0.050	**0.00035 J**	<0.0010	<0.50	<1.0	**0.0024 J**
Xylenes, Total	mg/L	*0.21*	*10*	<1.5	<0.0030	<3.0	<0.060	<1.5	<0.75	**0.0099 J**	<0.030	<0.30	<0.0030
Total Petroleum Hydrocarbon													
TPH - Oil & Grease	mg/L	---	---	<5.0	---	**2.6 J**	---	<5.6	<5.0	<5.0	**2.8 J**	<5.0	<5.0
Metals													
Arsenic	mg/L	*0.000045*	*0.010*	---	<0.020	---	<0.020	---	---	---	---	---	---
Barium	mg/L	*2.6*	*2.0*	---	**0.10**	---	**0.12**	---	---	---	---	---	---
Cadmium	mg/L	*0.018*	*0.005*	---	<0.005	---	<0.005	---	---	---	---	---	---
Chromium	mg/L	*0.11*	*0.10*	<0.0010	**0.0027 J**	**0.0017**	**0.011**	<0.0010	<0.0010	<0.0010	**0.0015**	**0.013**	<0.0010
Lead	mg/L	--	*0.015*	<0.0010	<0.005	<0.0010	**0.0036 J**	<0.0010	<0.0010	<0.0010	<0.0010	**0.0014**	<0.0010
Mercury	mg/L	*0.011*	*0.002*	---	<0.0002	---	<0.0002	---	---	---	---	---	---
Nickel	mg/L	*0.73*	---	0.0019	<0.020	0.0018	<0.020	0.0025	**0.0029**	**0.0027**	0.011	**0.080**	**0.0069**
Selenium	mg/L	*0.18*	*0.05*	---	**0.013 J**	---	<0.020	---	---	---	---	---	---

Table 8
Summary of Water Analytical Results, 2004-2008 - Monitoring Wells
RBTC LDB #1, Leitchfield, Kentucky
MACTEC Project No. 6680-04-9537

		Field Sample ID		MW-12B	MW-13	MW-14	MW-15	MW-16	MW-17	MW-18	MW-19	MW-20	MW-21
		Sample Collection Date		06/10/08	06/09/08	06/09/08	06/09/08	06/09/08	06/11/08	06/11/08	06/16/08	06/11/08	06/16/08
	Units	*PRG*	*MCL*										
Chlorinated Volatile Organic Compounds													
Tetrachloroethene	mg/L	*0.00066*	*0.0050*	**0.14**	<0.0010	<0.0010	<0.0010	<0.0010	**0.098**	<0.0010	<0.0010	<0.0010	<0.010
Trichloroethene	mg/L	*0.000028*	*0.0050*	**99**	**3.6**	<0.0010	**0.00057 J**	**0.0071**	**14**	**0.010**	<0.0010	**0.011**	**1.3**
1,1-Dichloroethene	mg/L	*0.34*	*0.0070*	**0.18**	**0.0085**	<0.0010	<0.0010	<0.0010	**0.4**	**0.078**	<0.0010	**0.91**	**0.014**
cis-1,2-Dichloroethene	mg/L	*0.061*	*0.070*	**23**	**2.1**	**0.029**	<0.0010	**0.0067**	**6.4**	**0.00097 J**	<0.0010	**0.018**	**0.086**
trans-1,2-Dichloroethene	mg/L	*0.12*	*0.10*	**0.1**	**0.034**	<0.0010	<0.0010	<0.0010	**0.042**	<0.0010	<0.0010	<0.0010	<0.010
Vinyl Chloride	mg/L	*0.00002*	*0.0020*	**1.8**	**0.0042**	**0.0050**	<0.0010	**0.0017**	**1.2**	<0.0010	<0.0010	**0.0022**	<0.010
1,1,1-Trichloroethane	mg/L	*3.2*	*0.20*	<0.010	<0.0010	<0.0010	<0.0010	<0.0010	<0.010	**0.0039**	<0.0010	**0.014**	<0.010
1,1,2-Trichloroethane	mg/L	*0.0050*	*0.00020*	<0.010	<0.0010	<0.0010	<0.0010	<0.0010	<0.010	<0.0010	<0.0010	<0.0010	<0.010
1,1-Dichloroethane	mg/L	*0.81*	--	**0.033**	**0.00084 J**	<0.0010	<0.0010	**0.0024**	**0.52**	**0.015**	<0.0010	**0.16**	<0.010
1,2-Dichloroethane	mg/L	*0.00012*	*0.005*	<0.010	<0.0010	<0.0010	<0.0010	<0.0010	<0.010	<0.0010	<0.0010	**0.0049**	<0.010
Carbon Tetrachloride	mg/L	*0.00017*	*0.0050*	<0.010	<0.0010	<0.0010	<0.0010	<0.0010	<0.010	<0.0010	<0.0010	<0.0010	<0.010
Total CVOCs	mg/L			***124***	***5.7***	***0.034***	***0.00057***	***0.018***	***23***	***0.11***	***0***	***1.1***	***1.4***
Other Volatile Organic Compounds													
Acetone	mg/L	*0.61*	--	<0.50	<0.050	<0.050	<0.050	<0.050	<0.50	<0.050	<0.050	**0.02**	<0.50
Chloroform	mg/L	*0.0062*	--	**0.0098 J**	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.0050	<0.0050	<0.0050	<0.050
2-Butanone (MEK)	mg/L	*1.9*	--	<0.10	<0.010	<0.010	<0.010	<0.010	<0.10	<0.010	<0.010	<0.010	<0.10
Methylene Chloride	mg/L	*0.0043*	*0.0050*	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.0050	<0.0050	<0.0050	<0.050
4-Methyl-2-pentanone (MIBK)	mg/L	*0.16*	--	<0.010	<0.010	<0.50	<0.50	<0.010	<0.010	<0.10	<0.010	<0.25	<0.010
Benzene	mg/L	*0.00034*	*0.0050*	<0.010	**0.00038 J**	<0.0010	<0.0010	<0.0010	**0.0077 J**	<0.0010	<0.0010	<0.0010	<0.010
n-Butylbenzene	mg/L	*0.24*	--	<0.0010	<0.0010	<0.050	<0.050	<0.0010	<0.0010	<0.010	<0.0010	<0.025	<0.0010
Ethylbenzene	mg/L	*0.0029*	*0.70*	<0.0010	<0.0010	<0.050	<0.050	<0.0010	<0.0010	<0.010	<0.0010	<0.025	<0.0010
Isopropylbenzene	mg/L	*0.66*	--	<0.0010	<0.0010	<0.050	<0.050	<0.0010	<0.0010	<0.010	<0.0010	<0.025	<0.0010
Naphthalene	mg/L	*0.0062*	--	<0.050	**0.00044 J**	<0.0050	<0.0050	<0.0050	<0.050	<0.0050	<0.0050	<0.0050	<0.050
Toluene	mg/L	*0.72*	*1.0*	**0.0028 J**	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.0050	<0.0050	**0.00032 J**	<0.050
1,2,4-Trimethylbenzene	mg/L	*0.012*	--	**0.0072 J**	<0.0010	<0.0010	<0.0010	<0.0010	<0.010	<0.0010	<0.0010	<0.0010	<0.010
1,2,3-Trimethylbenzene	mg/L	--	--	<0.010	<0.0010	<0.0010	<0.0010	<0.0010	<0.010	<0.0010	<0.0010	<0.0010	<0.010
1,3,5-Trimethylbenzene	mg/L	*0.012*	--	<0.010	<0.0010	<0.0010	<0.0010	<0.0010	<0.010	<0.0010	<0.0010	<0.0010	<0.010
Xylenes, Total	mg/L	*0.21*	*10*	<0.0030	<0.0030	<0.15	<0.15	<0.0030	<0.0030	<0.030	<0.0030	**0.027 J**	<0.0030
Total Petroleum Hydrocarbon													
TPH - Oil & Grease	mg/L	---	---	<5.0	**5.1**	**1.7 J**	<5.0	<5.0	<5.0	<5.0	<5.6	<5.0	<5.9
Metals													
Arsenic	mg/L	*0.000045*	*0.010*	---	---	---	---	---	---	---	---	---	---
Barium	mg/L	*2.6*	*2.0*	---	---	---	---	---	---	---	---	---	---
Cadmium	mg/L	*0.018*	*0.005*	---	---	---	---	---	---	---	---	---	---
Chromium	mg/L	*0.11*	*0.10*	**0.0010**	**0.002**	<0.0010	**0.0027**	<0.0010	<0.010	<0.010	**0.011**	**0.0044 J**	<0.010
Lead	mg/L	--	*0.015*	<0.0010	<0.0050 O	<0.0010	<0.0010	<0.0010	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Mercury	mg/L	*0.011*	*0.002*	---	---	---	---	---	---	---	---	---	---
Nickel	mg/L	*0.73*	---	**0.0087**	**0.0023**	**0.0032**	**0.0018**	**0.0025**	<0.020	<0.020	<0.020	<0.020	<0.020
Selenium	mg/L	*0.18*	*0.05*	---	---	---	---	---	---	---	---	---	---

Table 8
Summary of Water Analytical Results, 2004-2008 - Monitoring Wells
RBTC LDB #1, Leitchfield, Kentucky
MACTEC Project No. 6680-04-9537

Prepared by: ALD 7/2/08
Checked by: SMD 7/31/08

Notes:

mg/l Milligrams per liter
--- Not analyzed, not established, or not available
MCL USEPA Maximum Contaminant Level, or Action Level, for drinking watei
PRG USEPA Region 9 Preliminary Remediation Goal for tap water
Detected values are indicated in **bold**.
Values exceeding the MCL (or, if no MCL is established, the tap water PRG) are shadec
See laboratory reports for information on laboratory qualifiers
"*Total CVOCs*" is calculated as the sum of the CVOC values, non-detects are counted as zero
Laboratory Qualifiers:

J	(EPA) - Estimated value below the lowest calibration point. Confidence correlates with concentration
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits
J3	The associated batch QC was outside the established quality control range for precision
J4	The associated batch QC was outside the established quality control range for accuracy.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low
J8	The internal standard associated with this data responded abnormally low. The data is likely to show a high bias concerning the results
O	(ESC) Sample diluted due to matrix interferences that impaired ability to make an accurate analytical determination. Detection limit elevated due to dilutior
V	Additional QC information: the sample concentration is too high to evaluate accurate spike recoveries

Table 9
Summary of Water Analytical Results, 2004-2008 - Former Supply Wells
RBTC LDB #1, Leitchfield, Kentucky
MACTEC Project No. 6680-04-9537

Field Sample ID / *Sample Collection Date*	Units	*PRG*	*MCL*	PW-1 11/23/04	PW-1 03/13/07	PW-1 TOP 06/03/08	PW-1 MIDDLE 06/03/08	PW-1 BOTTOM 06/03/08	PW-1 MIDDLE 06/18/08	PW-2 03/14/07	PW-2 TOP 06/03/08	PW-2 MIDDLE 06/03/08	PW-2 BOTTOM 06/03/08	PW-2 MIDDLE 06/18/08
Chlorinated Volatile Organic Compounds														
Tetrachloroethene	mg/L	*0.00066*	*0.0050*	<0.005	<0.0050	<0.050	<0.050	<0.0010	<0.0010	<0.020	**0.0037**	**0.0037**	**0.003**	**0.0034**
Trichloroethene	mg/L	*0.000028*	*0.0050*	<0.005	**0.034**	**0.02 J**	**0.013**	**0.011**	**0.025**	**0.96**	**1.5**	**1.4**	**1.3**	**0.51**
1,1-Dichloroethene	mg/L	*0.34*	*0.0070*	**0.044**	**0.27**	**0.41**	**0.39**	**0.50**	**0.26**	**0.18**	**0.96**	**0.91**	**0.80**	**0.33**
cis-1,2-Dichloroethene	mg/L	*0.061*	*0.070*	**0.0080**	**0.12**	**0.088**	**0.085**	**0.088**	**0.095**	**1.3**	**1.8**	**1.9**	**1.9**	**1.1**
trans-1,2-Dichloroethene	mg/L	*0.12*	*0.10*	<0.005	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.020	**0.0062**	<0.0010	**0.0067**	**0.0064**
Vinyl Chloride	mg/L	*0.00002*	*0.0020*	<0.005	<0.0050	**0.0039**	**0.0031**	**0.0023**	**0.0049**	<0.020	**0.031**	**0.034**	**0.031**	**0.027**
1,1,1-Trichloroethane	mg/L	*3.2*	*0.20*	<0.005	**0.0082**	**0.022**	**0.016**	<0.0010	**0.051**	<0.020	**0.006**	**0.0064**	**0.006**	**0.0079**
1,1,2-Trichloroethane	mg/L	*0.0050*	*0.00020*	<0.005	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.020	<0.0010	<0.0010	<0.0010	<0.0010
1,1-Dichloroethane	mg/L	*0.81*	--	**0.070**	**0.31**	**0.40**	**0.34**	**0.41**	**0.42**	**0.13**	**0.18**	**0.20**	**0.18**	**0.14**
1,2-Dichloroethane	mg/L	*0.00012*	*0.005*	<0.005	<0.0050	**0.0022**	**0.0022**	**0.0019**	**0.0026**	<0.020	**0.0031**	**0.0033**	**0.0030**	**0.0036**
Carbon Tetrachloride	mg/L	*0.00017*	*0.0050*	<0.020	<0.020	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	**0.0014**
Total CVOCs	mg/L			***0.12***	***0.74***	***0.95***	***0.85***	***1.0***	***0.86***	***2.6***	***4.5***	***4.5***	***4.2***	***2.1***
Other Volatile Organic Compounds														
Acetone	mg/L	*0.61*	--	<0.025	<1.0	<2.5	**0.014 J**	**0.02 J**	**0.011 J**	<0.25	**0.013 J**	**0.012 J**	**0.012 J**	**0.011 J,J4**
Chloroform	mg/L	*0.0062*	--	<0.005	<0.10	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
2-Butanone (MEK)	mg/L	*1.9*	--	<0.025	<0.20	<0.010	<0.010	<0.010	<0.010	<0.050	<0.010	<0.010	<0.010	<0.010 J4
Methylene Chloride	mg/L	*0.0043*	*0.0050*	<0.005	<0.10	<0.0050	<0.0050	<0.0050	**0.0021 J**	<0.025	<0.0050	<0.0050	<0.0050	**0.00047 J**
4-Methyl-2-pentanone (MIBK)	mg/L	*0.16*	--	<0.025	<0.20	<0.010	<0.010	<0.010	<0.010	<0.050	<0.10	<0.010	<0.20	<0.010
Benzene	mg/L	*0.00034*	*0.0050*	<0.005	<0.020	<0.0010	<0.0010	<0.0010	**0.00036 J**	<0.0050	<0.0010	<0.0010	<0.0010	<0.010
n-Butylbenzene	mg/L	*0.24*	--	<0.005	<0.020	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.010	<0.0010	<0.020	<0.0010
Ethylbenzene	mg/L	*0.0029*	*0.70*	<0.005	<0.020	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.010	<0.0010	<0.020	<0.0010
Isopropylbenzene	mg/L	*0.66*	--	---	<0.020	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.010 J3	<0.0010	<0.020	<0.0010
Naphthalene	mg/L	*0.0062*	--	<0.005	<0.10	<0.0050	<0.0050	<0.0050	**0.0013 J**	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
Toluene	mg/L	*0.72*	*1.0*	<0.005	<0.10	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
1,2,4-Trimethylbenzene	mg/L	*0.012*	--	<0.005	<0.020	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010
1,2,3-Trimethylbenzene	mg/L	--	--	---	<0.020	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010
1,3,5-Trimethylbenzene	mg/L	*0.012*	--	<0.005	<0.020	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010
Xylenes, Total	mg/L	*0.21*	*10*	<0.015	<0.060	<0.0030	<0.0030	<0.0030	<0.0030	<0.015	<0.030 J3	<0.0030	<0.060	<0.0030
Total Petroleum Hydrocarbon														
TPH - Oil & Grease	mg/L	---	---	<5	---	---	---	---	---	---	---	---	---	---
Metals														
Arsenic	mg/L	*0.000045*	*0.010*	<0.02	---	---	---	---	---	---	---	---	---	---
Barium	mg/L	*2.6*	*2.0*	<0.01	---	---	---	---	---	---	---	---	---	---
Cadmium	mg/L	*0.018*	*0.005*	<0.01	---	---	---	---	---	---	---	---	---	---
Chromium	mg/L	*0.11*	*0.10*	<0.01	---	---	---	---	---	---	---	---	---	---
Lead	mg/L	--	*0.015*	<0.01	---	---	---	---	---	---	---	---	---	---
Mercury	mg/L	*0.011*	*0.002*	<0.0002	---	---	---	---	---	---	---	---	---	---
Nickel	mg/L	*0.73*	---	<0.01	---	---	---	---	---	---	---	---	---	---
Selenium	mg/L	*0.18*	*0.05*	<0.05	---	---	---	---	---	---	---	---	---	---

Table 9
Summary of Water Analytical Results, 2004-2008 - Former Supply Wells
RBTC LDB #1, Leitchfield, Kentucky
MACTEC Project No. 6680-04-9537

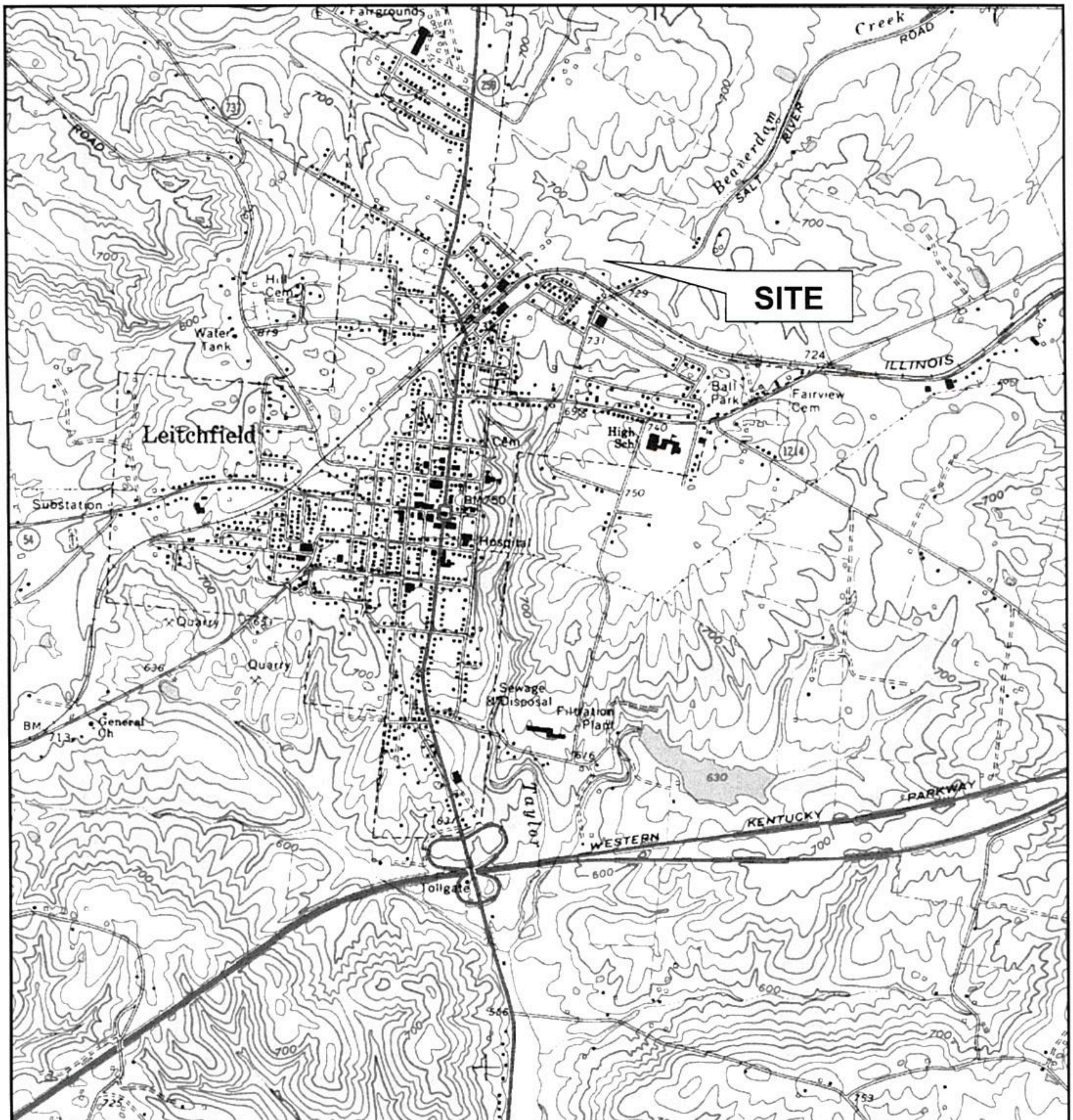
Prepared by: ALD 7/2/08
Checked by: SMD 7/31/08

Notes:

mg/l Milligrams per liter
--- Not analyzed, not established, or not available
MCL USEPA Maximum Contaminant Level, or Action Level, for drinking water
PRG USEPA Region 9 Preliminary Remediation Goal for tap water
Detected values are indicated in **bold**.
Values exceeding the MCL (or, if no MCL is established, the tap water PRG) are shaded
See laboratory reports for information on laboratory qualifiers
"*Total CVOCs*" is calculated as the sum of the CVOC values, non-detects are counted as zerc
Laboratory Qualifiers:

J (EPA) - Estimated value below the lowest calibration point. Confidence correlates with concentration.
J1 Surrogate recovery limits have been exceeded; values are outside upper control limits.
J2 Surrogate recovery limits have been exceeded; values are outside lower control limits.
J3 The associated batch QC was outside the established quality control range for precision.
J4 The associated batch QC was outside the established quality control range for accuracy.
J5 The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6 The sample matrix interfered with the ability to make any accurate determination; spike value is low.
J8 The internal standard associated with this data responded abnormally low. The data is likely to show a high bias concerning the results.
O (ESC) Sample diluted due to matrix interferences that impaired ability to make an accurate analytical determination. Detection limit elevated due to dilution.
V Additional QC information: the sample concentration is too high to evaluate accurate spike recoveries.

FIGURES

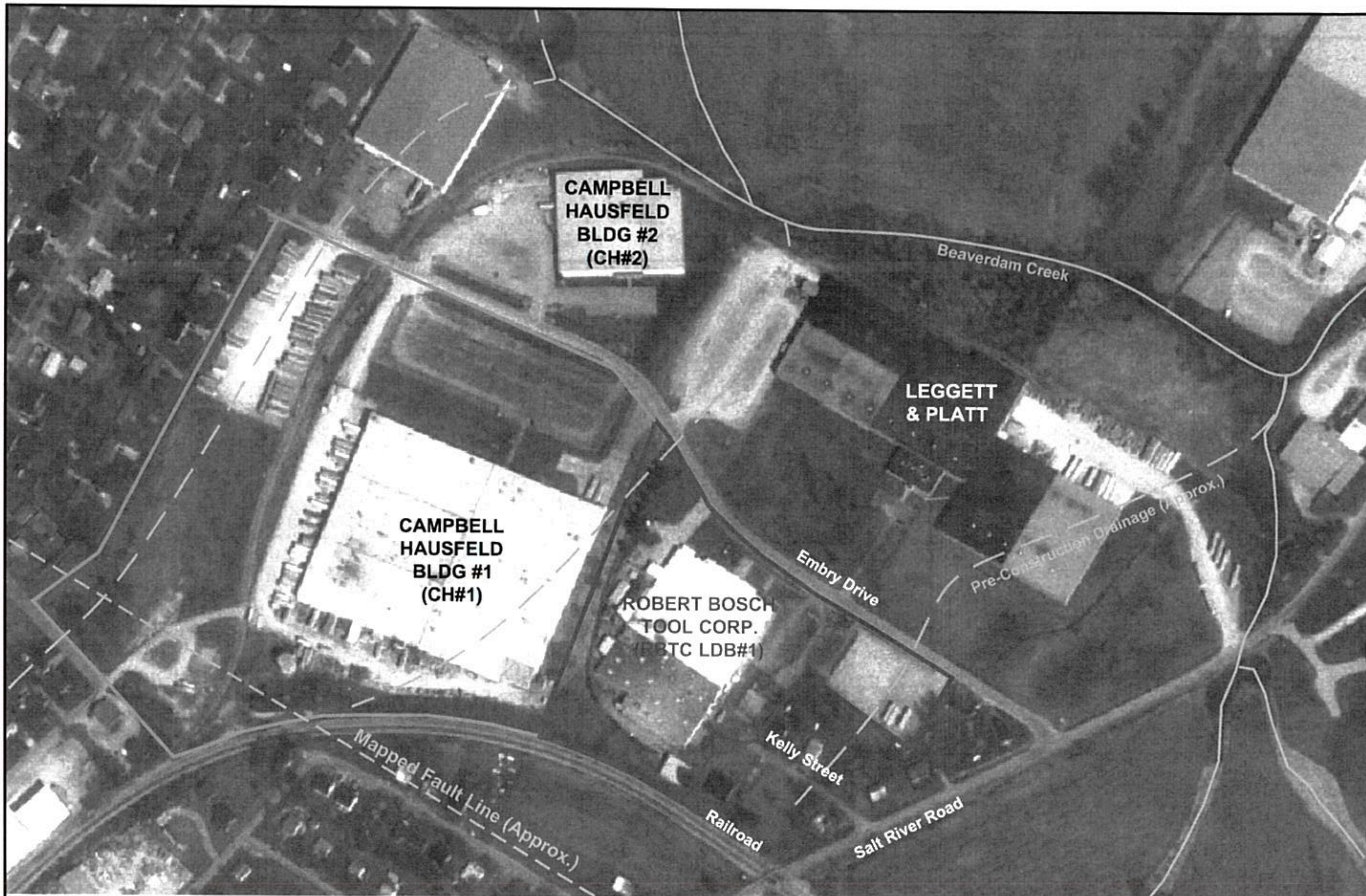


SOURCE: USGS 7.5' TOPOGRAPHIC QUADRANGLE MAP, LEITCHFIELD, KENTUCKY, 1967

0 1000 2000
SCALE IN FEET

NORTH

MACTEC 2456 Fortune Drive, Suite 100 Lexington, Kentucky 40509 Phone: (859) 255-3308	**TOPOGRAPHIC MAP** ROBERT BOSCH TOOL CORPORATION LEITCHFIELD DIVISION - BUILDING #1 LEITCHFIELD, KENTUCKY PROJECT NUMBER: 6680-04-9537-03	SCALE 1" = 2000' DATE 04/13/2007 DRAWN BY KDR APPROVED BY ALD	**FIG. 1**



SOURCE: U.S. GEOLOGICAL SURVEY, 03/15/1998

0 150 300
SCALE IN FEET

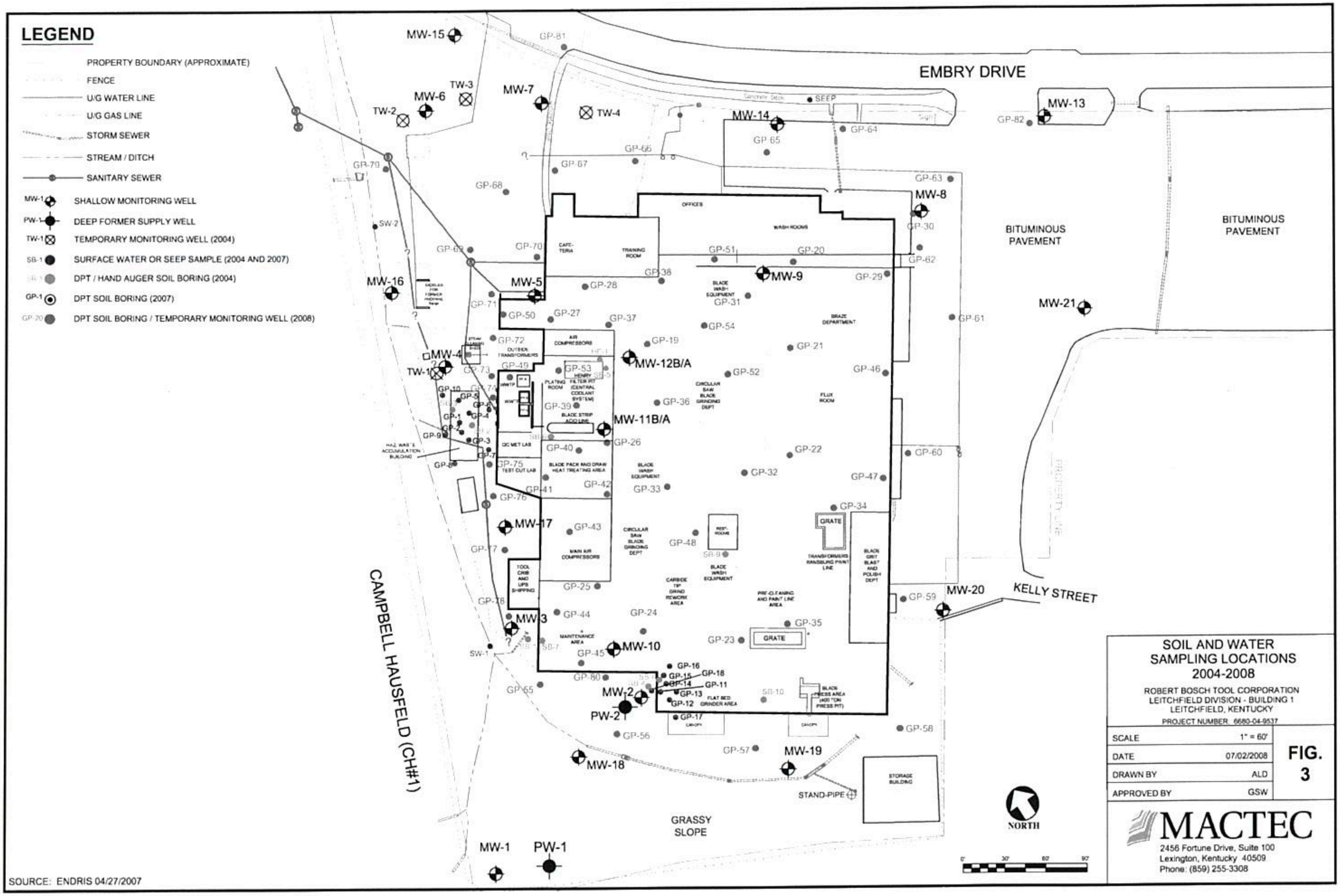
NORTH

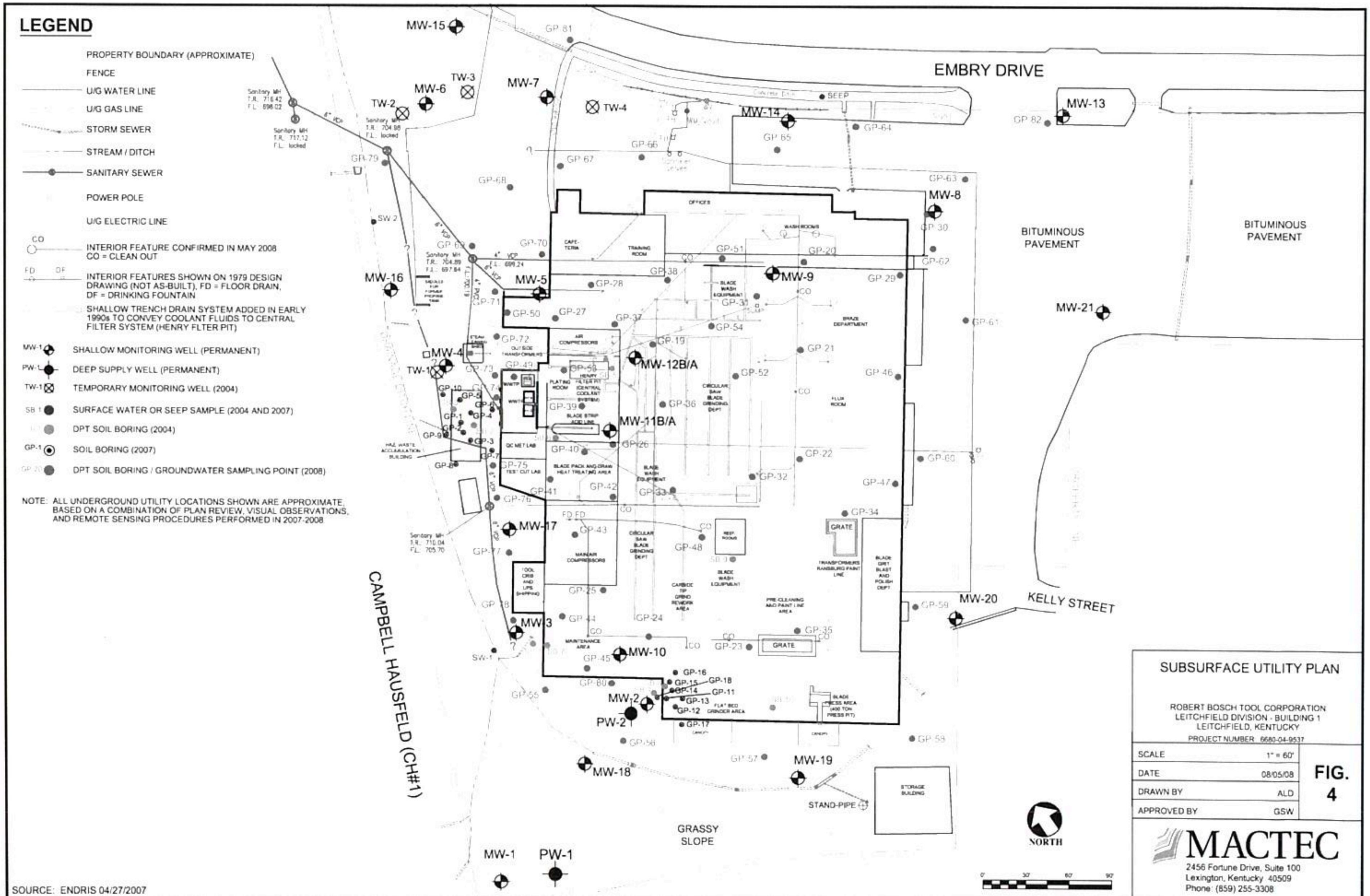
MACTEC
2456 Fortune Drive, Suite 100
Lexington, KY 40509
(859) 255-3308

AERIAL PHOTOGRAPH
ROBERT BOSCH TOOL CORPORATION
LEITCHFIELD DIVISION - BUILDING #1
LEITCHFIELD, KENTUCKY
PROJECT NUMBER: 6680-04-9537-03

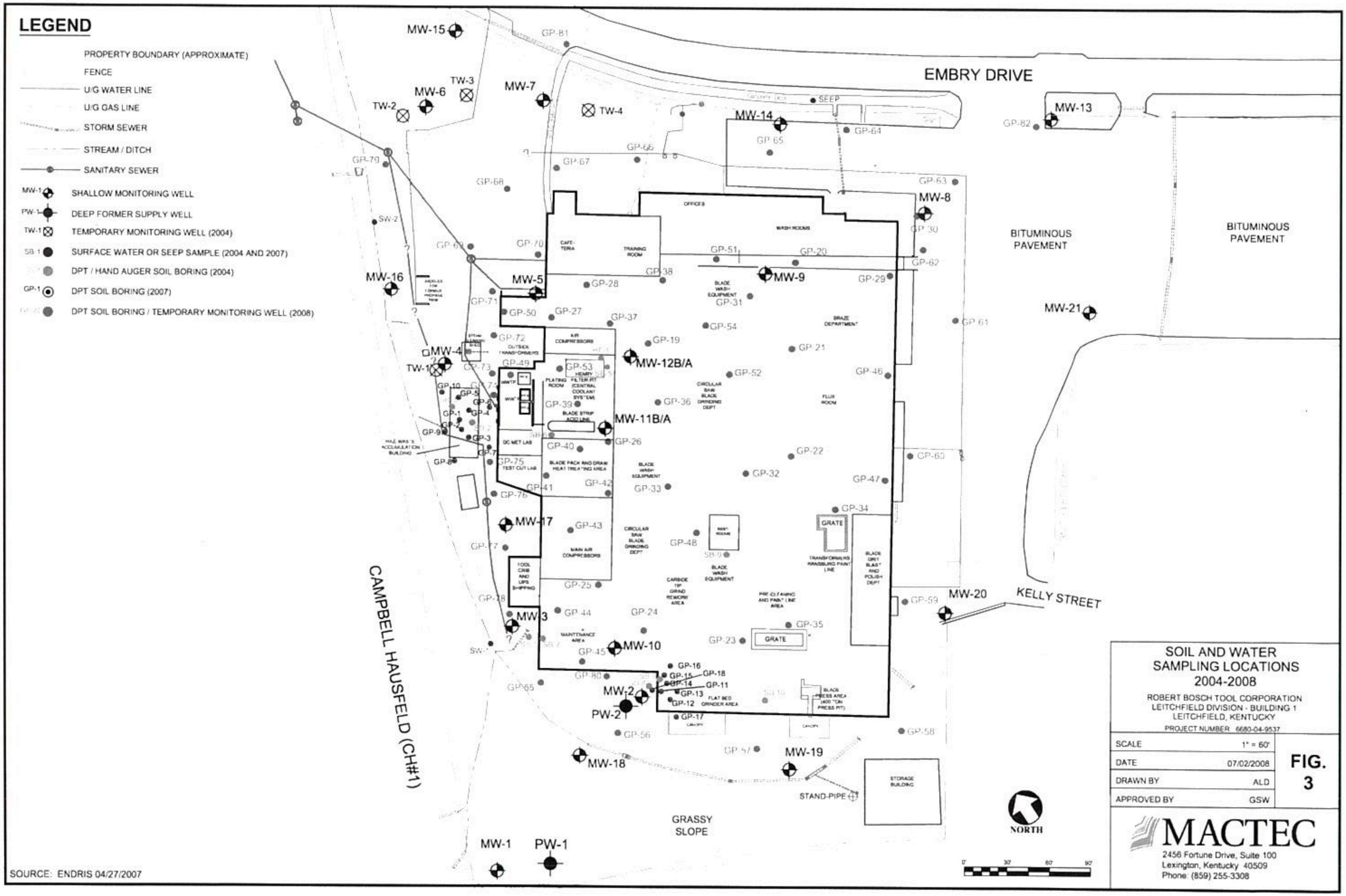
SCALE	1" = 300'
DATE	8/5/2008
DRAWN BY	KDR
APPROVED BY	ALD

FIG. 2

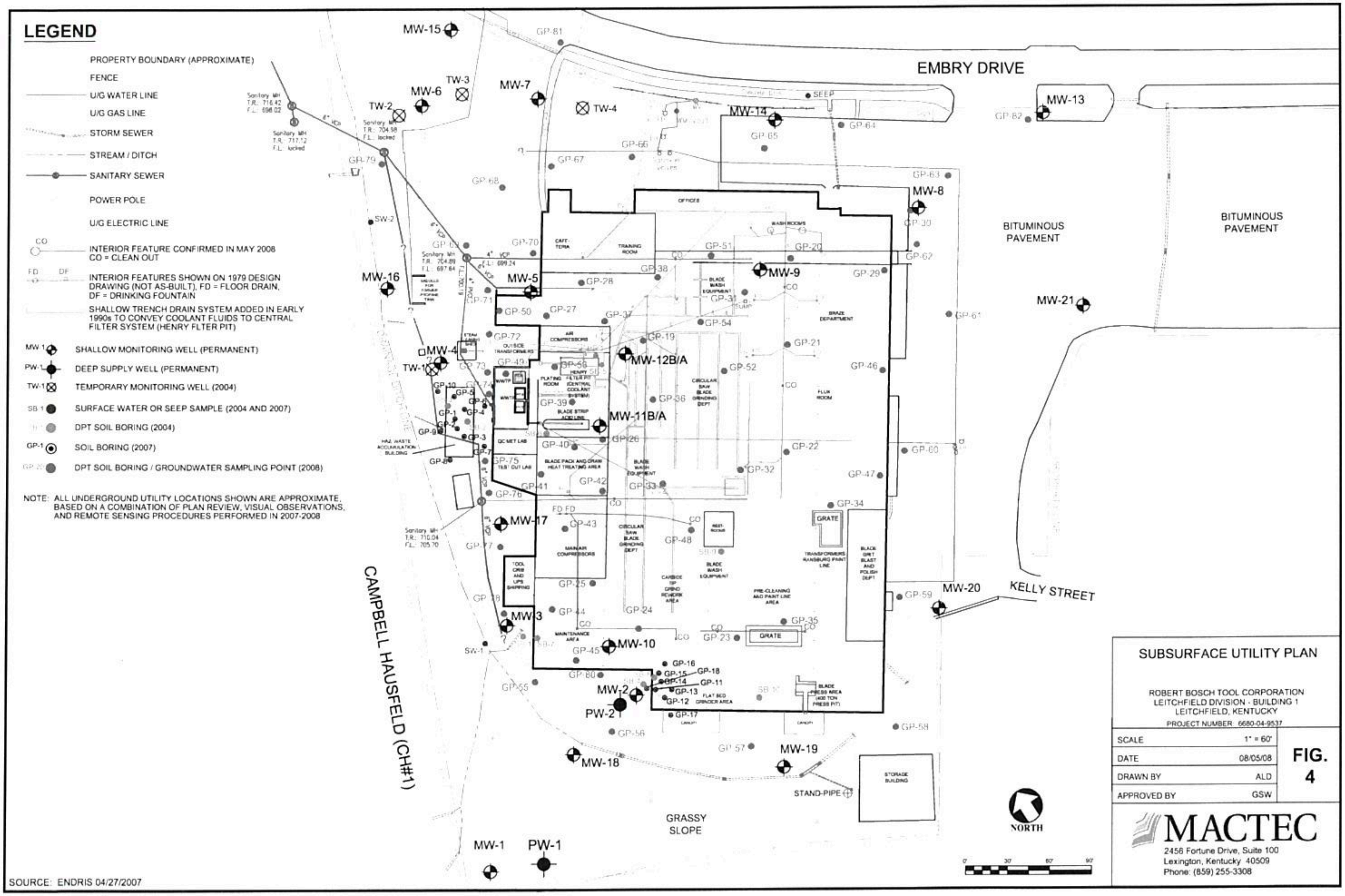

LEGEND
PROPERTY BOUNDARY (APPROXIMATE)
FENCE
U/G WATER LINE
U/G GAS LINE
STORM SEWER
STREAM / DITCH
SANITARY SEWER
SHALLOW MONITORING WELL
DEEP FORMER SUPPLY WELL
TEMPORARY MONITORING WELL (2004)
SURFACE WATER OR SEEP SAMPLE (2004 AND 2007)
DPT / HAND AUGER SOIL BORING (2004)
DPT SOIL BORING (2007)
DPT SOIL BORING / TEMPORARY MONITORING WELL (2008)
EMBRY DRIVE
KELLY STREET
CAMPBELL HAUSFELD (CH#1)
BITUMINOUS PAVEMENT
BITUMINOUS PAVEMENT
GRASSY SLOPE
STAND-PIPE
NORTH
SOURCE: ENDRIS 04/27/2007
SOIL AND WATER SAMPLING LOCATIONS 2004-2008
ROBERT BOSCH TOOL CORPORATION
LEITCHFIELD DIVISION - BUILDING 1
LEITCHFIELD, KENTUCKY
PROJECT NUMBER 6680-04-9537
SCALE 1" = 60'
DATE 07/02/2008
DRAWN BY ALD
APPROVED BY GSW
FIG. 3
MACTEC
2456 Fortune Drive, Suite 100
Lexington, Kentucky 40509
Phone: (859) 255-3308



LEGEND
PROPERTY BOUNDARY (APPROXIMATE)
FENCE
U/G WATER LINE
U/G GAS LINE
STORM SEWER
STREAM / DITCH
SANITARY SEWER
POWER POLE
U/G ELECTRIC LINE
INTERIOR FEATURE CONFIRMED IN MAY 2008
CO = CLEAN OUT
INTERIOR FEATURES SHOWN ON 1979 DESIGN DRAWING (NOT AS-BUILT), FD = FLOOR DRAIN, DF = DRINKING FOUNTAIN
SHALLOW TRENCH DRAIN SYSTEM ADDED IN EARLY 1990s TO CONVEY COOLANT FLUIDS TO CENTRAL FILTER SYSTEM (HENRY FLTER PIT)
SHALLOW MONITORING WELL (PERMANENT)
DEEP SUPPLY WELL (PERMANENT)
TEMPORARY MONITORING WELL (2004)
SURFACE WATER OR SEEP SAMPLE (2004 AND 2007)
DPT SOIL BORING (2004)
SOIL BORING (2007)
DPT SOIL BORING / GROUNDWATER SAMPLING POINT (2008)
NOTE: ALL UNDERGROUND UTILITY LOCATIONS SHOWN ARE APPROXIMATE, BASED ON A COMBINATION OF PLAN REVIEW, VISUAL OBSERVATIONS, AND REMOTE SENSING PROCEDURES PERFORMED IN 2007-2008.
EMBRY DRIVE
KELLY STREET
CAMPBELL HAUSFELD (CH#1)
BITUMINOUS PAVEMENT
BITUMINOUS PAVEMENT
GRASSY SLOPE
STAND-PIPE
NORTH
MW-1
PW-1
MW-2
PW-2
MW-3
MW-4
MW-5
MW-6
MW-7
MW-8
MW-9
MW-10
MW-11B/A
MW-12B/A
MW-13
MW-14
MW-15
MW-16
MW-17
MW-18
MW-19
MW-20
MW-21
TW-1
TW-2
TW-3
TW-4
SOURCE: ENDRIS 04/27/2007
SUBSURFACE UTILITY PLAN
ROBERT BOSCH TOOL CORPORATION
LEITCHFIELD DIVISION - BUILDING 1
LEITCHFIELD, KENTUCKY
PROJECT NUMBER 6680-04-9537
SCALE 1" = 60'
DATE 08/05/08
DRAWN BY ALD
APPROVED BY GSW
FIG. 4
MACTEC
2456 Fortune Drive, Suite 100
Lexington, Kentucky 40509
Phone: (859) 255-3308



LEGEND
PROPERTY BOUNDARY (APPROXIMATE)
FENCE
U/G WATER LINE
U/G GAS LINE
STORM SEWER
STREAM / DITCH
SANITARY SEWER
SHALLOW MONITORING WELL
DEEP FORMER SUPPLY WELL
TEMPORARY MONITORING WELL (2004)
SURFACE WATER OR SEEP SAMPLE (2004 AND 2007)
DPT / HAND AUGER SOIL BORING (2004)
DPT SOIL BORING (2007)
DPT SOIL BORING / TEMPORARY MONITORING WELL (2008)
EMBRY DRIVE
KELLY STREET
CAMPBELL HAUSFELD (CH#1)
BITUMINOUS PAVEMENT
BITUMINOUS PAVEMENT
GRASSY SLOPE
STAND-PIPE
NORTH
MW-1
PW-1
MW-2
PW-2
MW-3
MW-4
MW-5
MW-6
MW-7
MW-8
MW-9
MW-10
MW-11B/A
MW-12B/A
MW-13
MW-14
MW-15
MW-16
MW-17
MW-18
MW-19
MW-20
MW-21
TW-1
TW-2
TW-3
TW-4
SEEP
SW-1
SW-2
SOURCE: ENDRIS 04/27/2007
SOIL AND WATER SAMPLING LOCATIONS 2004-2008
ROBERT BOSCH TOOL CORPORATION
LEITCHFIELD DIVISION - BUILDING 1
LEITCHFIELD, KENTUCKY
PROJECT NUMBER 6680-04-9537
SCALE 1" = 60'
DATE 07/02/2008
DRAWN BY ALD
APPROVED BY GSW
FIG. 3
MACTEC
2456 Fortune Drive, Suite 100
Lexington, Kentucky 40509
Phone: (859) 255-3308


LEGEND
PROPERTY BOUNDARY (APPROXIMATE)
FENCE
U/G WATER LINE
U/G GAS LINE
STORM SEWER
STREAM / DITCH
SANITARY SEWER
POWER POLE
U/G ELECTRIC LINE
INTERIOR FEATURE CONFIRMED IN MAY 2008
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INTERIOR FEATURES SHOWN ON 1979 DESIGN DRAWING (NOT AS-BUILT), FD = FLOOR DRAIN, DF = DRINKING FOUNTAIN
SHALLOW TRENCH DRAIN SYSTEM ADDED IN EARLY 1990s TO CONVEY COOLANT FLUIDS TO CENTRAL FILTER SYSTEM (HENRY FLTER PIT)
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DEEP SUPPLY WELL (PERMANENT)
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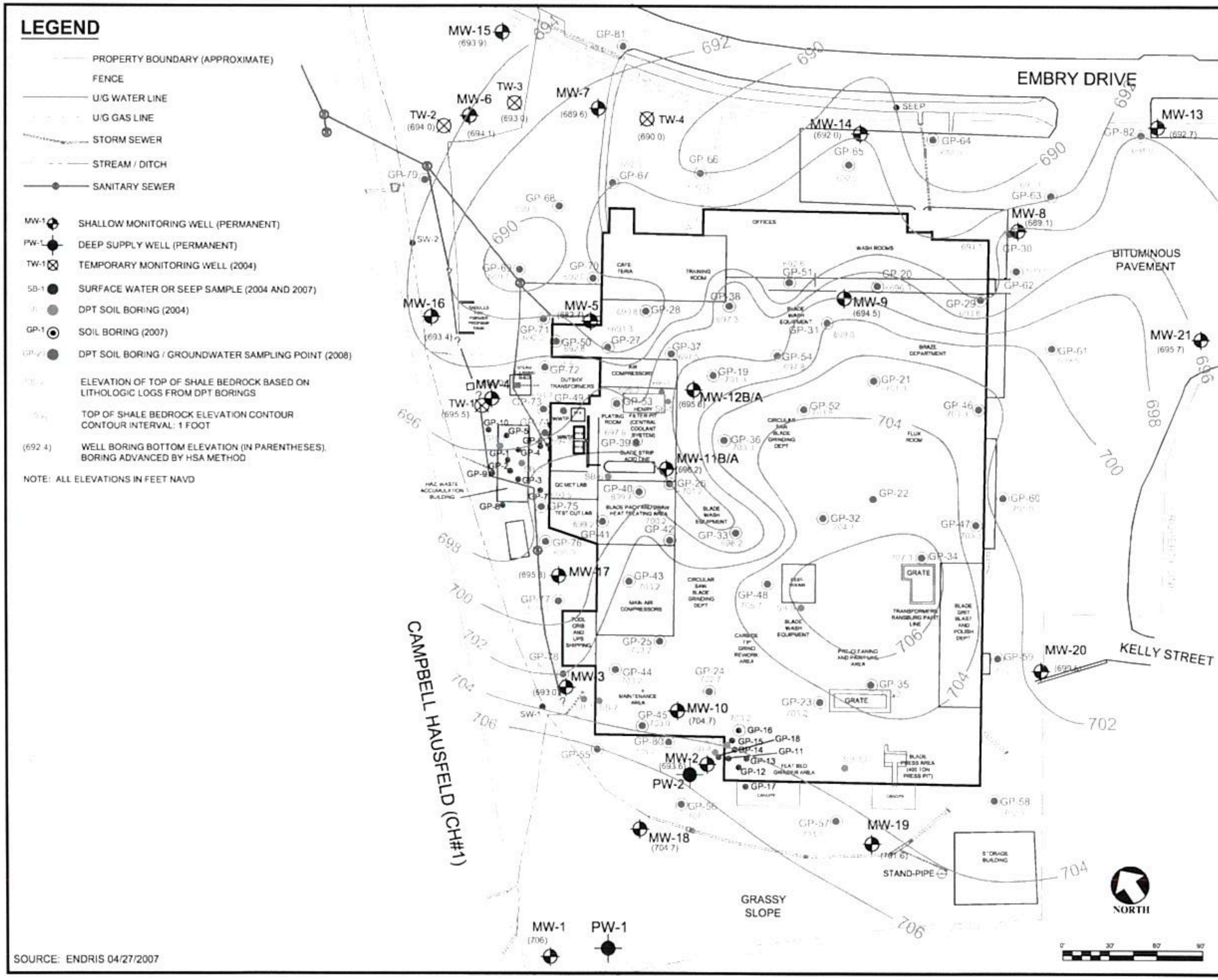
DPT SOIL BORING (2004)
SOIL BORING (2007)
DPT SOIL BORING / GROUNDWATER SAMPLING POINT (2008)
NOTE: ALL UNDERGROUND UTILITY LOCATIONS SHOWN ARE APPROXIMATE, BASED ON A COMBINATION OF PLAN REVIEW, VISUAL OBSERVATIONS, AND REMOTE SENSING PROCEDURES PERFORMED IN 2007-2008
EMBRY DRIVE
KELLY STREET
CAMPBELL HAUSFELD (CH#1)
BITUMINOUS PAVEMENT
BITUMINOUS PAVEMENT
GRASSY SLOPE
OFFICES
MW-1
PW-1
MW-2
PW-2
MW-3
MW-4
MW-5
MW-6
MW-7
MW-8
MW-9
MW-10
MW-11B/A
MW-12B/A
MW-13
MW-14
MW-15
MW-16
MW-17
MW-18
MW-19
MW-20
MW-21
TW-1
TW-2
TW-3
TW-4
STAND-PIPE
NORTH
SOURCE: ENDRIS 04/27/2007
SUBSURFACE UTILITY PLAN
ROBERT BOSCH TOOL CORPORATION
LEITCHFIELD DIVISION - BUILDING 1
LEITCHFIELD, KENTUCKY
PROJECT NUMBER 6680-04-9537
SCALE 1" = 60'
DATE 08/05/08
DRAWN BY ALD
APPROVED BY GSW
FIG. 4
MACTEC
2456 Fortune Drive, Suite 100
Lexington, Kentucky 40509
Phone: (859) 255-3308



BEDROCK SURFACE ELEVATION CONTOUR MAP

ROBERT BOSCH TOOL CORPORATION
LEITCHFIELD DIVISION - BUILDING 1
LEITCHFIELD, KENTUCKY
PROJECT NUMBER 6680-04-9537

SCALE	1" = 60'
DATE	08/04/2008
DRAWN BY	KDR
APPROVED BY	ALD

FIG. 5

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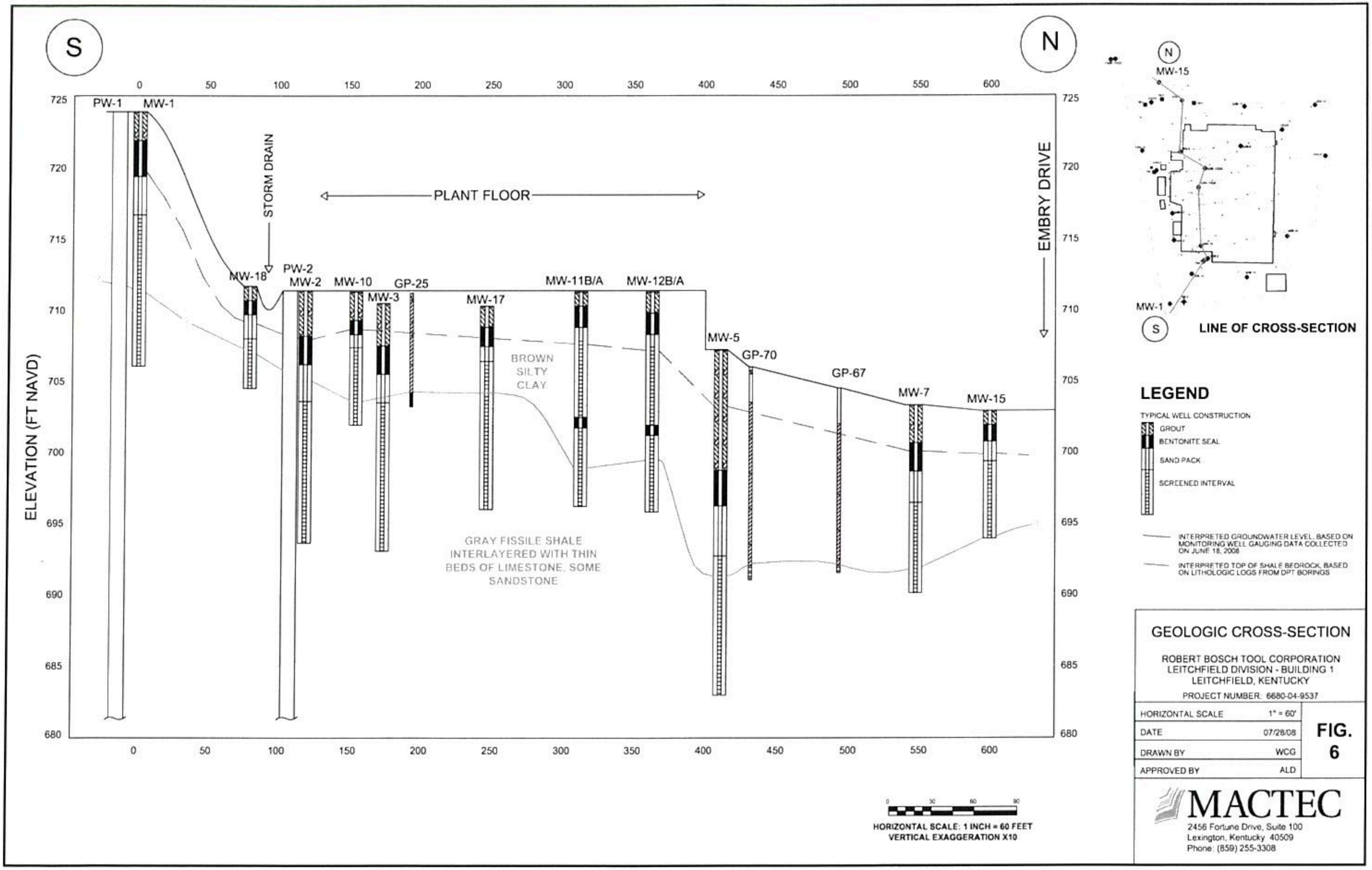
Phone: (859) 255-3308



GEOLOGIC CROSS-SECTION

ROBERT BOSCH TOOL CORPORATION
LEITCHFIELD DIVISION - BUILDING 1
LEITCHFIELD, KENTUCKY

PROJECT NUMBER: 6680-04-9537

HORIZONTAL SCALE	1" = 60'
DATE	07/28/08
DRAWN BY	WCG
APPROVED BY	ALD

FIG. 6

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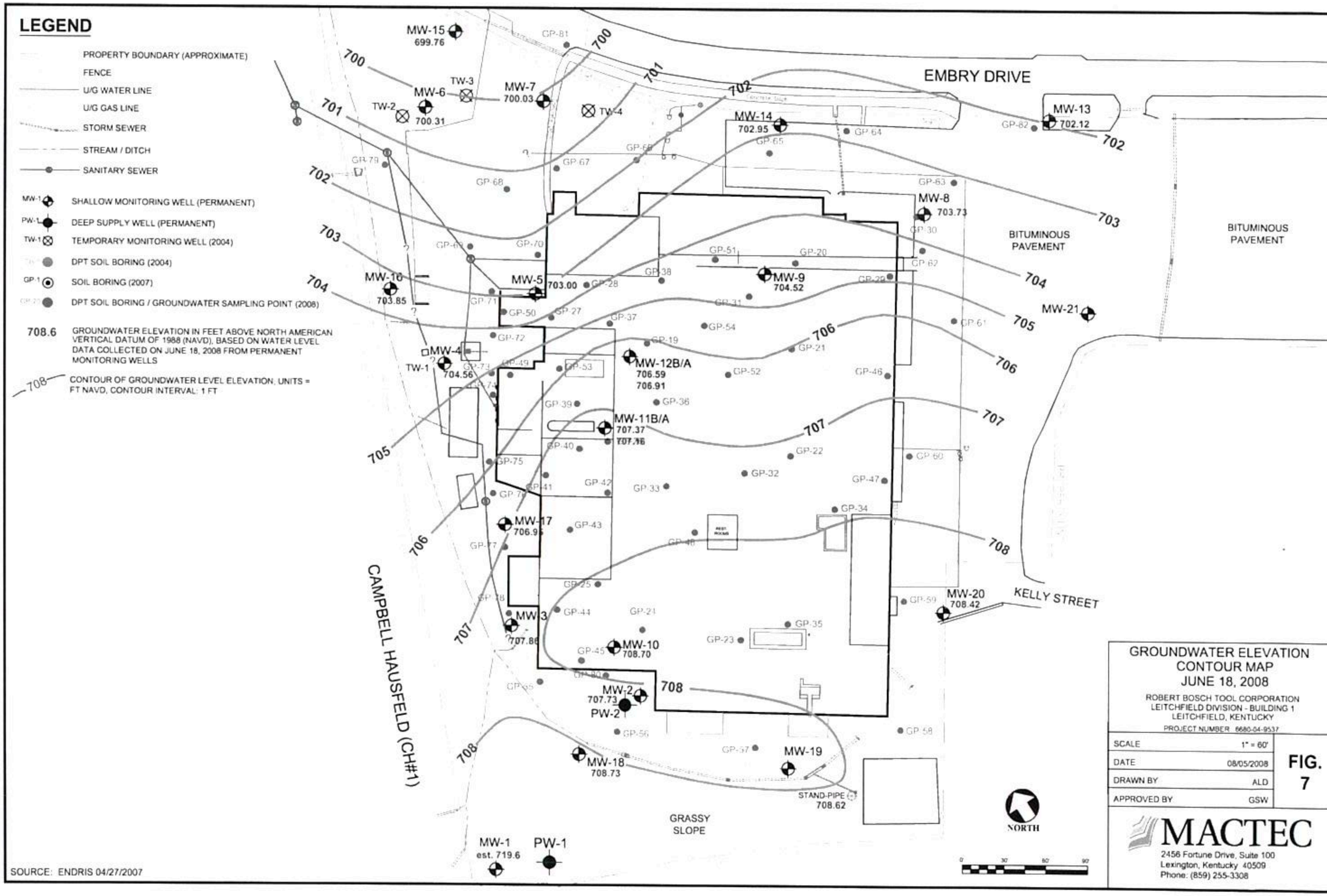
Phone: (859) 255-3308



LEGEND
PROPERTY BOUNDARY (APPROXIMATE)
FENCE
U/G WATER LINE
U/G GAS LINE
STORM SEWER
STREAM / DITCH
SANITARY SEWER
MW-1 SHALLOW MONITORING WELL (PERMANENT)
PW-1 DEEP SUPPLY WELL (PERMANENT)
TW-1 TEMPORARY MONITORING WELL (2004)
DPT SOIL BORING (2004)
GP-1 SOIL BORING (2007)
DPT SOIL BORING / GROUNDWATER SAMPLING POINT (2008)
708.6 GROUNDWATER ELEVATION IN FEET ABOVE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD), BASED ON WATER LEVEL DATA COLLECTED ON JUNE 18, 2008 FROM PERMANENT MONITORING WELLS
708 CONTOUR OF GROUNDWATER LEVEL ELEVATION, UNITS = FT NAVD, CONTOUR INTERVAL: 1 FT
EMBRY DRIVE
KELLY STREET
CAMPBELL HAUSFELD (CH#1)
BITUMINOUS PAVEMENT
BITUMINOUS PAVEMENT
GRASSY SLOPE
MW-15 699.76
MW-6
TW-3
MW-7 700.03
TW-2
700.31
TW-4
MW-14 702.95
MW-13 702.12
MW-8 703.73
MW-9 704.52
MW-5 703.00
MW-10 703.85
MW-21
MW-4
TW-1
704.56
MW-12B/A 706.59 706.91
MW-11B/A 707.37 707.16
MW-17 706.95
MW-3 707.88
MW-10 708.70
MW-2 707.73
PW-2
MW-18 708.73
MW-19
STAND-PIPE 708.62
MW-20 708.42
MW-1 est. 719.6
PW-1
700
701
702
703
704
705
706
707
708
NORTH
SOURCE: ENDRIS 04/27/2007
GROUNDWATER ELEVATION CONTOUR MAP JUNE 18, 2008
ROBERT BOSCH TOOL CORPORATION
LEITCHFIELD DIVISION - BUILDING 1
LEITCHFIELD, KENTUCKY
PROJECT NUMBER 6680-04-9537
SCALE 1" = 60'
DATE 08/05/2008
DRAWN BY ALD
APPROVED BY GSW
FIG. 7
MACTEC
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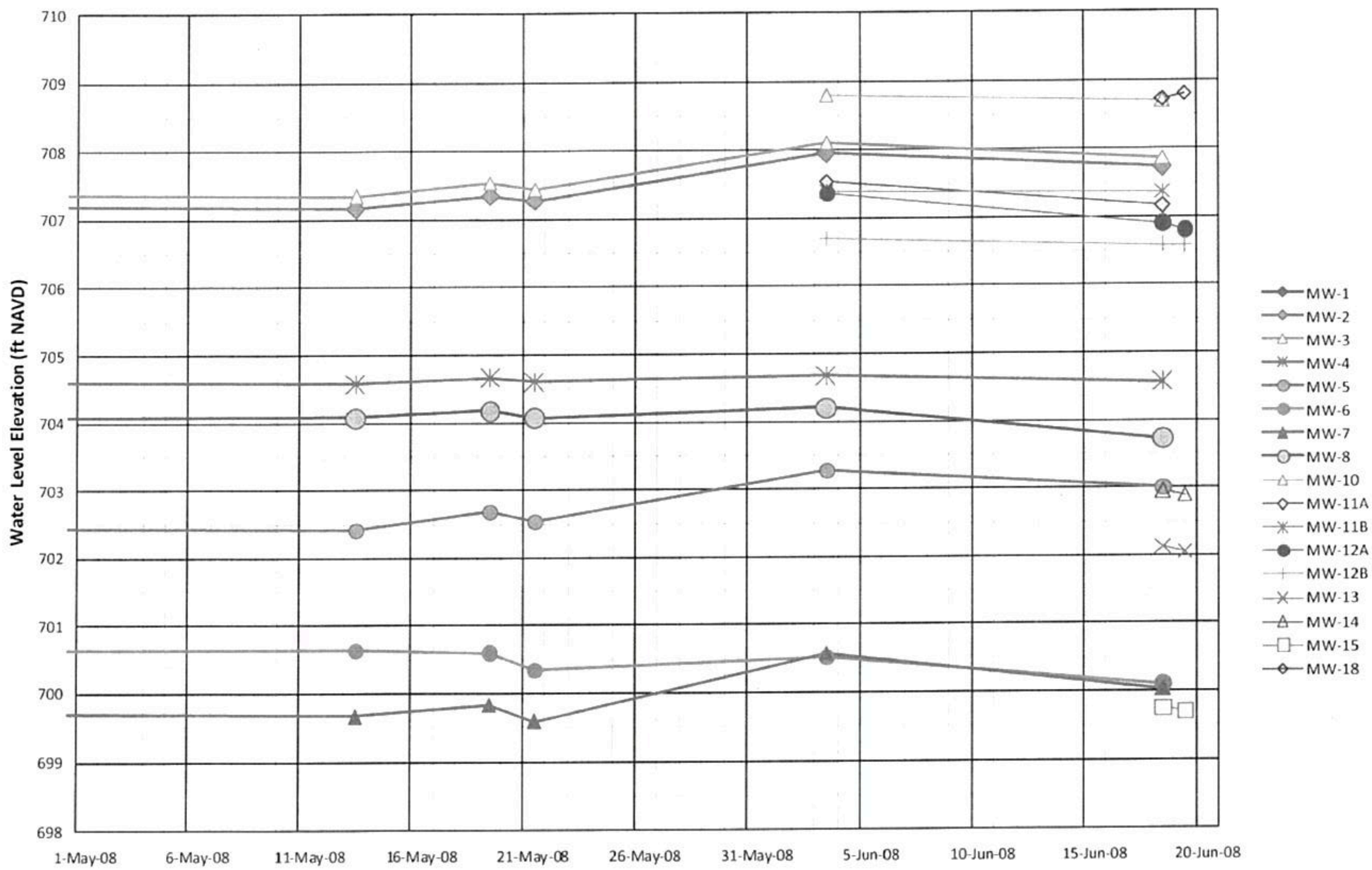
Lexington, Kentucky 40509
Phone: (859) 255-3308



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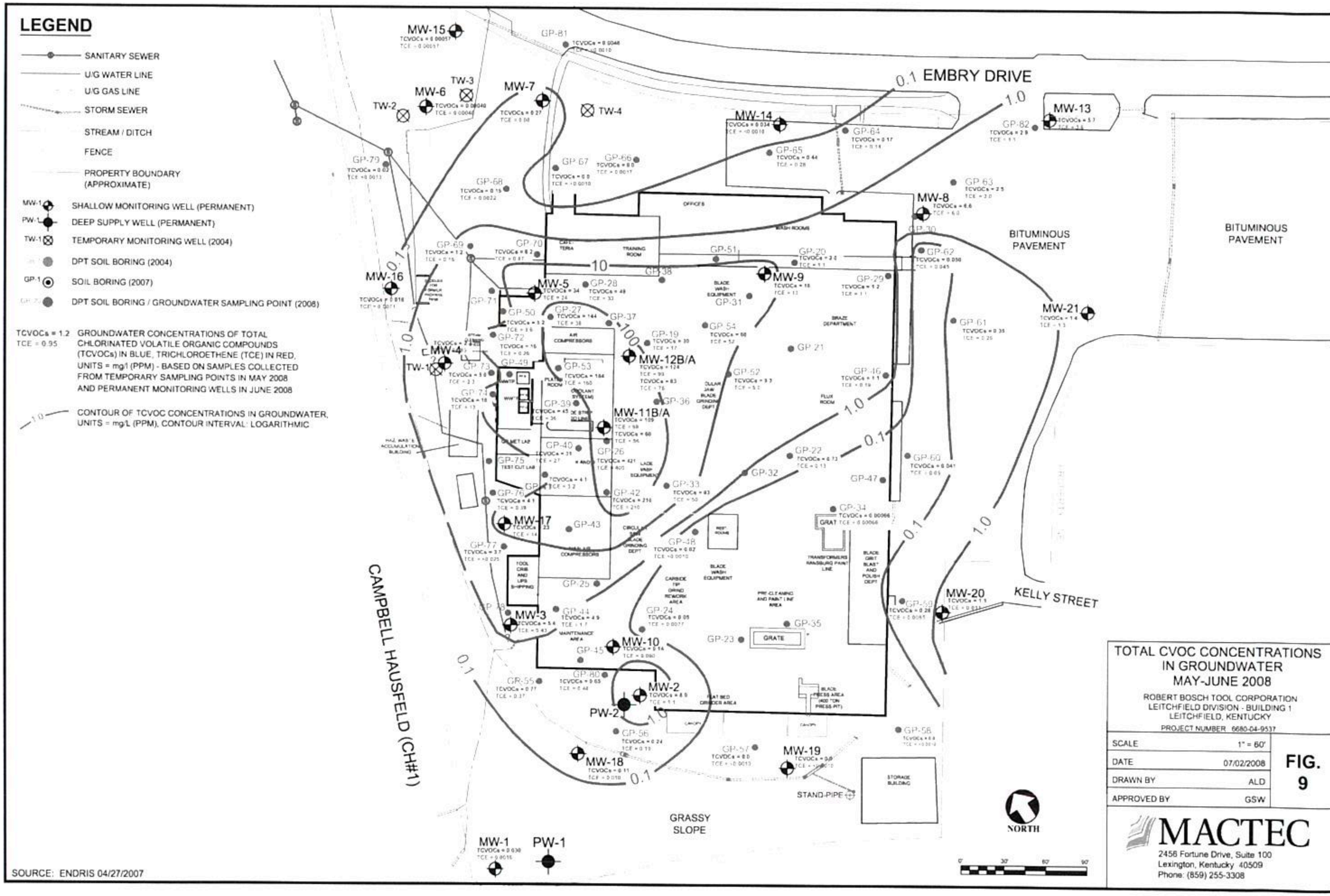
MONITORING WELL HYDROGRAPHS

ROBERT BOSCH TOOL CORPORATION
LEITCHFIELD DIVISION - BUILDING 1
LEITCHFIELD, KENTUCKY

PROJECT NUMBER: 6680-04-9537

SCALE	SEE GRAPH
DATE	08/05/2008
DRAWN BY	ALD
APPROVED BY	KDR

FIG. 8


LEGEND
SANITARY SEWER
U/G WATER LINE
U/G GAS LINE
STORM SEWER
STREAM / DITCH
FENCE
PROPERTY BOUNDARY (APPROXIMATE)
MW-1 SHALLOW MONITORING WELL (PERMANENT)
PW-1 DEEP SUPPLY WELL (PERMANENT)
TW-1 TEMPORARY MONITORING WELL (2004)
DPT SOIL BORING (2004)
GP-1 SOIL BORING (2007)
DPT SOIL BORING / GROUNDWATER SAMPLING POINT (2008)
TCVOCs = 1.2 TCE = 0.95 GROUNDWATER CONCENTRATIONS OF TOTAL CHLORINATED VOLATILE ORGANIC COMPOUNDS (TCVOCs) IN BLUE, TRICHLOROETHENE (TCE) IN RED, UNITS = mg/l (PPM) - BASED ON SAMPLES COLLECTED FROM TEMPORARY SAMPLING POINTS IN MAY 2008 AND PERMANENT MONITORING WELLS IN JUNE 2008
1.0 CONTOUR OF TCVOC CONCENTRATIONS IN GROUNDWATER, UNITS = mg/L (PPM), CONTOUR INTERVAL: LOGARITHMIC
EMBRY DRIVE
KELLY STREET
CAMPBELL HAUSFELD (CH#1)
BITUMINOUS PAVEMENT
BITUMINOUS PAVEMENT
GRASSY SLOPE
STAND-PIPE
STORAGE BUILDING
NORTH
MW-1
PW-1
MW-2
PW-2
MW-3
MW-4
MW-5
MW-6
MW-7
MW-8
MW-9
MW-10
MW-11B/A
MW-12B/A
MW-13
MW-14
MW-15
MW-16
MW-17
MW-18
MW-19
MW-20
MW-21
TW-1
TW-2
TW-3
TW-4
0.1
1.0
10
100
SOURCE: ENDRIS 04/27/2007
TOTAL CVOC CONCENTRATIONS IN GROUNDWATER MAY-JUNE 2008
ROBERT BOSCH TOOL CORPORATION
LEITCHFIELD DIVISION - BUILDING 1
LEITCHFIELD, KENTUCKY
PROJECT NUMBER 6680-04-9537
SCALE 1" = 60'
DATE 07/02/2008
DRAWN BY ALD
APPROVED BY GSW
FIG. 9
MACTEC
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